

AUGUST 1995
Volume 63 No 8

AMATEUR RADIO



Journal of the Wireless Institute of Australia



Full of the latest amateur radio news, information and technical articles including:

- * VK4EMM Tower Delta Vertical Phased Array
- * ICOM IC-225 Revisited
- * Review of ICOM IC-775 DSP HF Transceiver

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Cover

It is a tradition of IARU Region 3 that retiring Directors are presented with a Certificate of Appreciation. David Wardlaw VK3ADW was a Director of Region 3 from 1988 to 1994, and

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Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs, that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

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The world's first and oldest National Radio Society
Founded 1910

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Editor's Comment

Morse Code

In an article published in *Amateur Radio* last May, and also in recent letters to "Over to You", opinions have been expressed regarding Morse code proficiency being a compulsory pre-requisite to obtaining an amateur HF licence. Some have supported the present rule, which is almost as old as amateur radio itself, and some have opposed it. We have published these divergent viewpoints in support of members' rights to freedom of speech.

Nevertheless, debate within Australia cannot be isolated from the international situation. There is an officially recognised international understanding and policy on this subject. Many legal, technical, diplomatic and sociological factors are involved, not all as widely known as might be desirable. One of our readers, Col Harvey VK1AU, has prepared a summary of the official IARU position and the multiplicity of factors which influenced its evolution. Col's contribution is rather too long to reproduce in full, but I thought it would be worth quoting some of its essential points in a tabular format.

1. Factors Influencing Choice of Mode

- Suitability for task.
- Equipment cost and availability.
- Personal preference.

2. Reasons for Choosing Morse Code

- Simple, cheaper equipment.
- Easier for home construction.
- Useful even with low power.
- Less affected by interference.
- Tolerant of propagation difficulties (eg auroral reflection).
- Overcomes language barriers better than other modes.
- Operator satisfaction from exercise of acquired skill.

3. Technological Changes

- Morse little affected by complex digital systems.
- Developments in keys, receiver performance, etc continue to improve communication by Morse.

4. Need for Understanding

- All amateurs should understand evolution of international regulations and appreciate value of Morse competence.
- Relative merits of all modes should be widely understood. Debate should be informed, not emotional.

5. HF Environment

- Inherently international.
- Propagation may vary rapidly.
- Amateur service needs frequency agility due to narrow bands.
- Consequently, operator skills important.

Continued on page 55

WIA News

No Cancer Link to Power Line Fields

An American study on "Power Line Fields and Public Health", concerned with the possible link between cancers and low frequency electromagnetic fields from power lines and electrical appliances, has determined that there is no consistent or significant connection.

As reported in *The ARRL Letter* for 7 June 1995, the study from the Council of the American Physical Society (APS) concluded that: "While it is impossible to prove no deleterious health effects occur

from exposure to any environmental factor, it is necessary to demonstrate a consistent, significant, and causal relationship before one can conclude that such effects do occur.

From this standpoint, the conjectures relating cancer to power line fields have not been scientifically substantiated," said the APS.

They found that the scientific literature on the subject and reports of reviews by other panels did not reveal any consistent, significant link between cancer and power line fields and that "the great preponderance of . . .

research findings have failed to substantiate those studies which have reported specific adverse health effects from exposure to such fields."

There has been some litigation in this area in the US in recent years and the APS commented that the money spent by states and municipalities in litigation actions was not commensurate with the risk, if there was any. For those with Internet access, and who want to read more on the subject, the APS has a background report by David Hafemeister which can be found on their World Wide Web Home Page at: <http://aps.org>.

WIA Divisions

The WIA consists of seven autonomous State Divisions. Each member of the WIA is a member of a Division, usually in their residential State or Territory, and each Division looks after amateur radio affairs within its area.

Division	Address	Officers	Weekly News Broadcasts	1995 Fees
VK1	ACT Division GPO Box 600 Canberra ACT 2601	President Rob Apathy Secretary Len Jones Treasurer Alex Colquhitt	VK1KRA VK1NLJ VK1AC	3.570 MHz LSB, 146.900 MHz FM each Wednesday evening commencing at 8.00 pm local time. (F) \$70.00 (G) (S) \$56.00 (X) \$42.00
VK2	NSW Division 109 Wigram Street Parramatta NSW (PO Box 1066 Parramatta 2124) Phone (02) 689 2417 Freecall 1800 817 644 Fax (02) 633 1525	President Michael Corbin Secretary Pixie Chapple Treasurer Peter Kloppenburg (Office hours Mon-Fri 11.00-14.00 Mon 1900-2100)	VK2PFO VK2KPC VK2CPK	From VK2WI 1.845, 3.595, 7.146*, 10.125, 24.950, 28.320, 29.120, 52.120, 52.525, 144.150, 147.000, 438.525, 1281.750 (*morning only) with relays to some of 14,160, 18,120, 21,170, 584.750 ATV sound. Many country regions relay on 2 m or 70 m repeaters. Sunday 1000 and 1930. Highlights included in VK2AWX Newcastle news, Monday 1930 on 3.593 plus 10 m, 2m, 70 cm, 23 cm. The broadcast text is available on packet. (F) \$66.75 (G) (S) \$53.40 (X) \$38.75
VK3	Victorian Division 40G Victory Boulevard Ashburton Vic 3147 Phone (03) 9885 9261 Fax (03) 9885 9298	President Jim Linton Secretary Barry Wilton Treasurer Rob Hailey (Office hours Tue & Thur 0830-1530)	VK3PC VK3XV VK3XLZ	MONTHLY BROADCAST on the second Sunday of the month, starts 10.30 am. Primary frequencies 3.615 LSB, 7.085 LSB, and (F) \$72.00 (G) (S) \$58.00 (X) \$44.00 FM(R)s 146.700 Mt Dandenong, 147.250 Mt Macedon, 147.225 Mt Baw Baw, and 2 m FM(R)s VK3RMA, VK3RSH, VK3ROW. 70 cm FM(R)s VK3ROU and VK3RGL. Major news under call VK3WI on Victorian packet BBS.
VK4	Queensland Division GPO Box 638 Brisbane QLD 4001 Phone (07) 46 4714	President Geoff Sanders Secretary Lance Bickford Treasurer Rodger Bingham	VK4KEL VK4ZAZ VK4HD	1.825, 3.605, 7.118, 10.135, 14.342, 18.132, 21.175, 24.970, 28.400 MHz. 52.525 regional 2m repeaters and 1298.100 0900 hrs Sunday. Repeated on 3.605 & 147.150 MHz, 1930 Monday (F) \$72.00 (G) (S) \$58.00 (X) \$44.00
VK5	South Australian Division 34 West Thebarton Road Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone (08) 352 3428	President Garry Herden Secretary Maurie Hooper Treasurer Charles McEachern	VK5ZK VK5EA VK5DKD	1820 kHz 3.550 MHz, 7.095, 14.175, 28.470, 53.100, 147.000 FM(R) Adelaide, 146.700 FM(R) Mt North, 146.900 FM(R) South East, ATV Ch 34 579.000 Adelaide, ATV 444.250 Mt North Barossa Valley 146.825, 438.425 (NT) 3.555, 7.065, 10.125, 146.700, 0900 hrs Sunday (F) \$72.00 (G) (S) \$58.00 (X) \$44.00
VK6	West Australian Division PO Box 10 West Perth WA 6872 Phone (09) 351 8873	President Cliff Bastin Secretary Mark Bastin Treasurer Bruce Hedland-Thomas	VK6LZ VK6OO	146.700 FM(R) Perth, at 0930 hrs Sunday, relayed on 1.825 3.560, 7.075, 14.115, 14.175, 21.185, 28.345, 50.150, 438.525 MHz. Country relays 3.582, 147.350(R) Busselton 146.900(R) Mt William (Bunbury) 147.225(R), 147.250(R) Mt Saddleback 146.725(R) Albany 146.825(R) Mt Barker broadcast repeated on 146.700 on 1930 hrs. (F) \$60.75 (G) (S) \$48.60 (X) \$32.75
VK7	Tasmanian Division 52 Connaught Crescent West Launceston TAS 7250 Phone (003) 31 9608	President Andrew Dixon Secretary Robin Harwood Treasurer Terry Ives	VK7GL VK7RH VK7ZTI	146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.750 (VK7RWN), 3.570, 7.090, 14.130, 52.100, 144.150 (Hobart) Repeated Tues 3.590 at 1930 hrs (F) \$69.00 (G) (S) \$55.65 (X) \$40.00
VK8	(Northern Territory is part of the VK5 Division and relays broadcasts from VK5 as shown received on 14 or 28 MHz).			Membership Grades Full (F) Pension (G) Needy (G) Student (S) Non receipt of AR (X)
Note: All times are local. All frequencies MHz.				Three-year membership available to (F) (G) (X) grades at fee x 3 times.

■ Antennas

The VK4EMM Tower Delta Vertical Phased Array (TDVPA) A Winning DX Antenna for 40 m

John Loftus VK4EMM describes a useful 40 m gain antenna suitable for the small suburban block.*

Here is a steerable 40 m system that meets all of the challenges of a small suburban block and fits under the local town planning restrictions. This vertical phased array is a real winner for 40 m DX operation. It provides directive gain, directive nulls and a very fast rotation system at relatively little cost. On air reports confirm better than three "S" points variation as the beam is steered through 360 degrees. Reports indicate two "S" points gain over a

single mono pole vertical, for low angle DX propagation. The rotation allows the beam to be turned as fast as it takes to turn an eight position rotary switch — about two seconds! Best of all this dream come true is easy to build.

Array Design

Figure 1 provides an elevation view of how two independent verticals are combined to produce the phased array. Vertical one (V1) is a

commercial multiband vertical, which is fed directly with 50 ohm RG213 coax. Vertical two (V2) is a self supporting tower. Its primary role is to carry a commercially manufactured five element triband Yagi (HB35C) for 20, 15 and 10 m. Its secondary role is to form part of the vertical system. I am pleased to be able to say that both of the commercial antennas were manufactured in Australia to very high standards by Andy Coman VK3WH who advertises in *Amateur Radio*.

Vertical two is fed with RG213 via a switched delay system, as shown in Figure 2. The relay switching provides eight combinations for the connection of three coaxial delay lines made from RG213. Electrical lengths for the three delay lines are 1/8, 1/4 and 1/2 wavelength. The physical lengths are determined by the velocity factor of the coax, which is 0.66 for RG213. The switching design ensures that there are no opened coax stubs across the active feeder. Both the centre conductor and the shield conductor are switched. Accordingly, all coax connectors are mounted on a plastic box which houses the DPDT relays.

Tower Delta Match

The method of matching the grounded tower, shown in Figure 1,

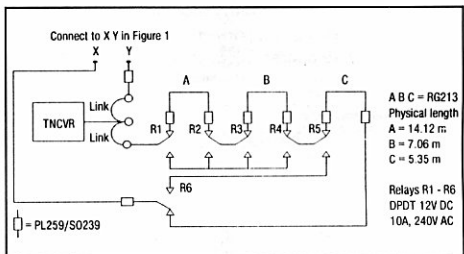
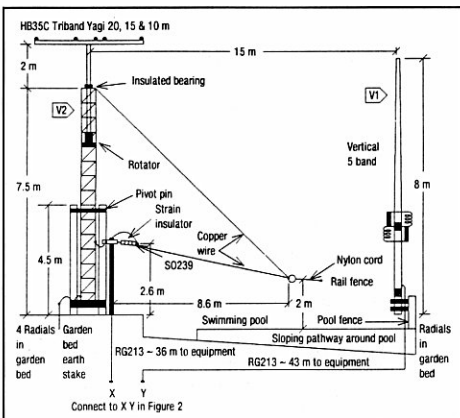


Fig 1 and 2 — VK4EMM 40 m vertical phased array.
A B C are RG213 delay lines.
Physical length A = 14.12 m
B = 7.06 m
C = 5.35 m
Relays 1 — 6 are DPDT 12 V DC, 10 A, 240 V AC.

Notes: 1. Use pole 1 to switch centre conductor; use pole 2 to switch to outer conductor. 2. SO239 sockets mounted on plastic box, 190 x 60 x 100 mm. 3. My delay lines A B C sit on the floor of the shack under the operating table. 4. Point to point wiring to relay contacts works fine (keep short). 5. Design ensures that no open ended coax sits on feedline.

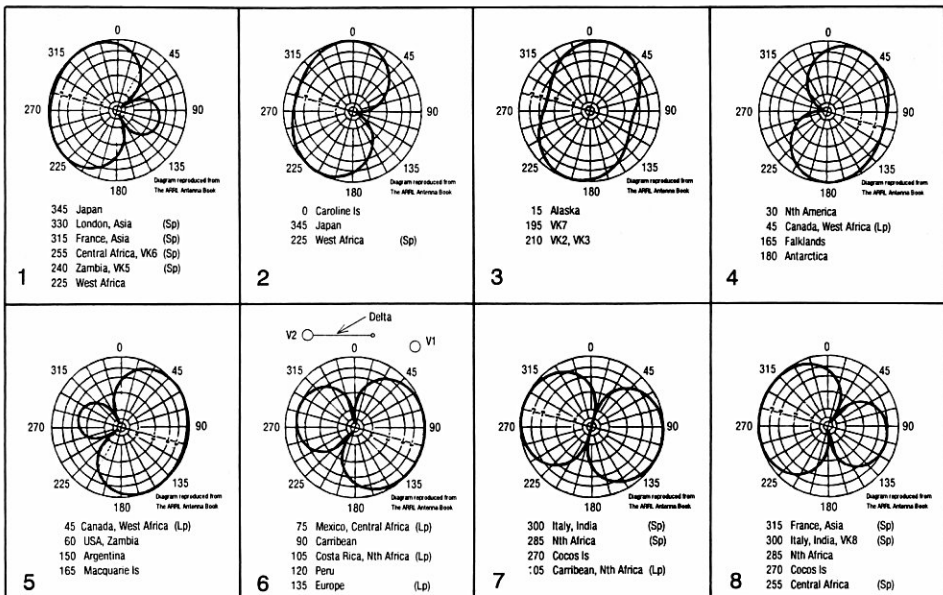


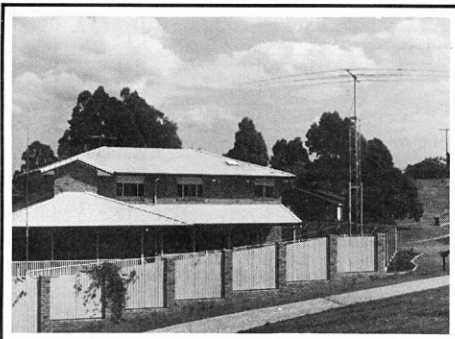
Fig 3 — ARRL patterns¹ for the two verticals spaced $\frac{3}{8}$ of a wavelength, shown in modified form for the 0 degree elevation angle.

was developed after many months of trial and error using a variety of conventional and unconventional methods. The conventional gamma match and the omega match were the first implemented. However, both of these methods left too much to be desired. They were characterised by

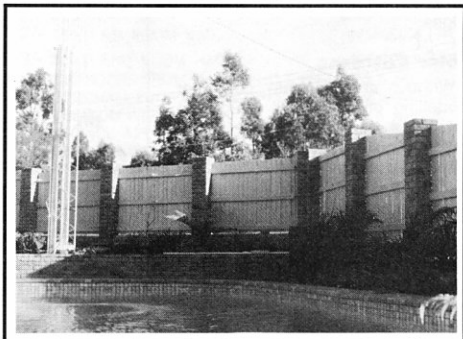
very narrow bandwidth and very high voltages close to the feed point. Performance as an independent vertical was well below the first vertical, which was used as a performance benchmark.

The adopted matching method is a form of delta match, with the tower

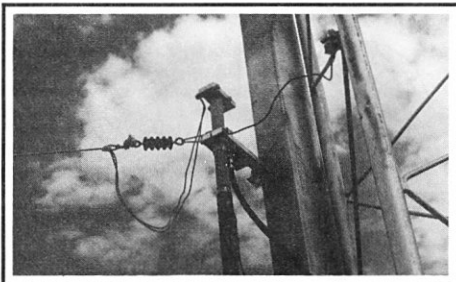
providing one side of the triangle. This Tower/Delta (TD) system provides significant benefits including 50 ohms at the feed point, broad bandwidth and low SWR across the full 40 m band, no tuning capacitors or loading coils required, high efficiency without an extensive earth



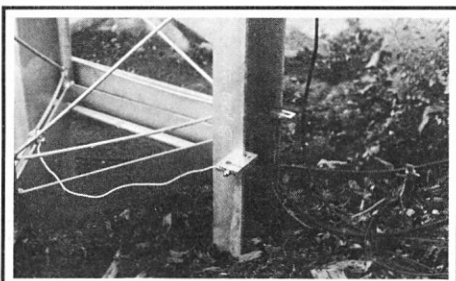
The small suburban setting for the VK4EMM HF antenna system.



Delta matching wire extended from tower to supporting fence rail.



Coaxial feedline connected to tower and delta match wire (also visible is a black nylon insulator and experimental loading coil for 80 and 160 m).

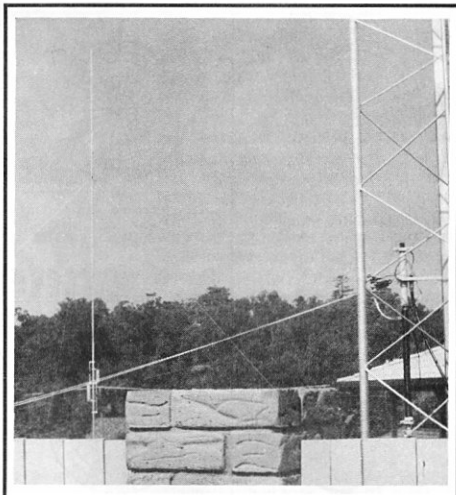


Base connections to a 2 m earth stake and four random length radials which sit on the surface of the garden beds. One radial (approx a half wavelength long) connects to the base of the second vertical. However, this connection has no noticeable effect on performance. The tower supports sit in one cubic metre of concrete, 1.5 m deep.

system and predominantly vertical polarisation. Moreover, the TD vertical equals the peak performance of the benchmark vertical, and outperforms the benchmark vertical at the band edges.

Polar Patterns

Without an adequate computer modelling program it is difficult to determine the expected H-plane patterns for varying angles of propagation. Nevertheless, a good representation of the actual DX performance results is provided by the ARRL patterns¹ for the two verticals spaced $3/8$ of a wavelength, which are shown in modified form in Figure 3 for the 0 degree elevation angle. The forward lobes are relatively broad for each of the eight patterns, whilst the nulls are relatively narrow and deep. This arrangement



Pool fence mounting for the multiband vertical.

Switch Position	1 = Coax in Cct			1 = Relay ON					
	A	B	C	R1	R2	R3	R4	R5	R6
8	0	0	0	1	0	0	1	1	1
7	0	0	1	1	0	0	1	0	0
6	0	1	0	1	1	0	0	1	1
5	0	1	1	1	1	0	0	0	0
4	1	0	0	0	0	1	1	1	1
3	1	0	1	0	0	1	1	0	0
2	1	1	0	0	0	0	0	1	1
1	1	1	1	0	0	0	0	0	0

Fig 4 — Relay control logic

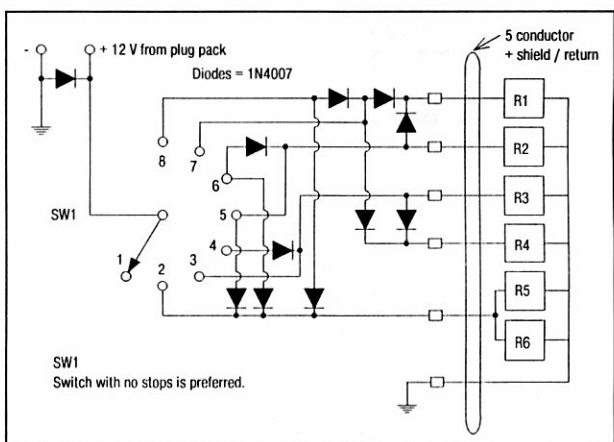


Fig 5 — Relay control unit.

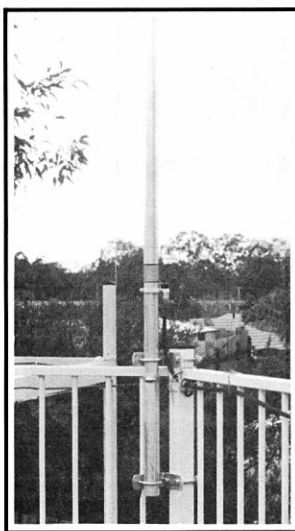
allows some useful movement of the null while maintaining forward gain. The precise operational performance could be the subject of further theoretical modelling.

Control System

Figures 4 & 5 present design details for the relay control logic. The single wafer rotary switch and diodes are mounted in a small box which sits on the operating table. The control box is connected via shielded 5 core cable to the delay switching system, which is placed on a shelf (out of the way) behind the transmitter. The three coaxial delay lines are simply rolled up and sit on the floor under the operating table.

Performance

The dividends from successful antenna development are very high, for both transmit and receive. Since completing the system on Tuesday, 16 August 1994, I have been able, for the



first time in 26 years of operation, to exchange good reports long path to West Africa, and have solid copy from many QRP (5 watt) stations in USA. A single call in a pile-up is often enough to get an immediate response. These are some of the magic moments that make all of the development effort with antennas worthwhile.

The outstanding success of this vertical system has inspired a great deal of interest among 40 m DX operators worldwide. The minimal requirements on height and space lead to further possibilities for high performance systems on 80 m and 160 m. To this extent Bill W8JGU is preparing to build a similar model for 80 m. The results will certainly be watched with keen interest.

Reference

¹ARRL Antenna Book (1991) 16th Edition, page 8-6.

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■ Equipment Review

ICOM IC-775 DSP HF All Mode Transceiver

Reviewed by Ron Fisher VK3OM.



ICOM IC775 DSP HF Transceiver.

What Is It?

The ICOM IC-775 DSP is a new top line transceiver. It takes over from the now aging IC-765. Of course, the IC-781 is still the highest priced transceiver that ICOM produce but this is only available on special order at a price of around \$13,000. No stocks of this transceiver are available in Australia. The IC-775 DSP retails at \$7849.65 which puts it out of reach of many amateurs but, for those lucky enough to afford one, it has a multiplicity of facilities that are not available in many other transceivers. Of course, in time, many of the unique features of a top line transceiver will filter down to lower priced equipment.

The IC-775 comes in two levels of sophistication, the IC-775 and the IC-775 DSP. The DSP equipped model will be the only one available in Australia. It makes more sense to build the DSP unit in than to offer it as an optional extra. After all, if you are spending over \$7,000, why not spend a bit extra and have the benefit of digital signal processing for both transmit and receive. I think this would be money very well spent.

Features

The IC-775 is a full featured base station transceiver. It transmits on all the HF amateur bands from 160 to 10 metres with a power output in excess of 200 watts. The receiver section covers all frequencies from 100 kHz to 30 MHz and, like the transmitter, has all mode capability. In addition, there is a second receiver built-in which allows you to listen on two separate frequencies at the same time.

A switched mode power supply is also built-in to allow operation from normal AC mains power. There is no provision for operation from a 13.8 volt DC power source. The switched mode power supply helps to keep the size and weight of the IC-775 down but, even so, it weighs in at 16.7 kg and measures 424 mm wide, 150 mm high and 390 mm deep. This is exactly the same size as the earlier IC-765 and almost 1 kg less in weight. But the new IC-775 has double the transmitter power output.

The fluorescent display on the old IC-765 has been updated with a large LCD similar to the display of the

IC-736/IC-738. However, the information the display provides to the user is vastly increased over the two lower priced models. We will cover the facilities provided later in this article.

Probably the most interesting aspect of the new transceiver is the digital signal processor. Facilities available with the processor include receiver noise and heterodyne reduction, and independent adjustment of transmitted and received bandwidth with separate settings for high and low frequency response. The transmitted signal is generated from the DSP to produce low distortion audio on SSB and AM and clean carrier for CW.

A new feature for ICOM is the provision of twin pass-band tuning controls. This allows independent adjustment of the high and low frequency ends of the received band pass. There is also a manual notch filter which doubles as an audio peak filter. However, separate controls are included for each function.

Of course one of the highlights of the IC-775 DSP (as with most of the current ICOM range) is the incredible memory system. To start with, there are one hundred and one programmable memories. Channels one to ninety nine can accept frequency and mode while memories 100 and 101, actually labelled P1 and P2, can be used to set the band edges for the programmed scan function. As usual, all memories are tunable so you can tune away from them with the normal main tuning control but return to the memorised frequency at the touch of a button. In addition, there are two VFOs with the usual facilities for split operation.

As this transceiver is large, the front panel controls are of good size and are well spaced. There are also more of them than you will find on your standard transceiver. It's good to see that the AF and RF gain controls are concentric, not separated as on some of the other ICOM HF transceivers. A new control on this class of rig is a "tone" control. This provides top cut only, but is useful none the less.

The Preamp/Attenuator control has been changed. There are now two preamp selections. Preamp 1 gives 10 dB gain on all HF bands, while

preamp 2 gives an additional 16 dB gain above 21 MHz. The attenuator has been changed from 10 dB steps on the IC-765 to 6 dB steps. With three steps, this gives a maximum of 18 dB attenuation as against 30 dB on the old model. I would have preferred to have had at least four positions to give 24 dB cut and possibly five to bring it up to 30 dB. Carrying out antenna and IMD tests requires at least this amount of attenuation.

Again, there are two antenna connectors on the rear panel. These are controlled either by front panel switching or programmed via the band switching for automatic selection.

Missing from ICOM transceivers since the days of the old IC-745 has been the variable AGC decay control. I used a 745 for many years and always thought that this was the best thing ever put on a transceiver. For some reason it disappeared with the demise of the 745 and hasn't been seen since, until now, with the exception of the high priced IC-781. This control should be on all transceivers.

On The Air

The first thing noted with the IC-775 DSP is that the microphone is an optional extra. Luckily I have a couple of ICOM microphones tucked away for such emergencies. I usually like to include a short review on microphones supplied with transceivers; however, this will not happen in our current review. Perhaps ICOM might like to supply a few of their current series of microphones for separate review.

Considering the complexity of the front panel, the transceiver is very easy to get up and going. However, an hour spent reading the instruction manual beforehand is very worth while. Many functions are not self evident, in particular the "Set" mode where you can optimise 26 different functions. Let's look at a few of these.

The CW operator can set his preferred pitch from 300 to 900 Hz in 20 Hz steps. RTTY keying polarity can be reversed to give mark/space for either key open or closed. Transmitted and received bandwidth can be set independently. On receive,

the low frequency can be varied in 18 steps from 80 to 500 Hz. The high frequency cut can likewise be set to 14 frequencies between 1.5 and 3.3 kHz. The transmitted response can be varied in a similar way. Another nice feature for the CW operator is that the CW pitch mentioned above can be assigned to the squelch control for normal front panel operation. The squelch is then set to the full off position. You will have fun exploring all of the other variable parameters. When in the "Set" mode the various functions are identified on the main LCD so you can see what is happening.

The transceiver was used over a four day period on various antennas, including beams and long wires and, overall, the performance was faultless. Received audio quality was good on the internal speaker, which is mounted facing up in the cabinet top panel. Received audio quality using a good external speaker was top class.

For SSB operation I found that setting the band pass to 250 Hz at the low end and 2.5 kHz at the top end produced the best results. However, with ease of changing the response you can, of course, set it to your own taste. ICOM have carried over their two antenna connectors from the earlier 736/738. This is a great "why didn't they think about that before?" idea. If you run a tri-band beam for high frequencies and, say, a trap dipole for 80 and 40 metres, all your antenna switching can be carried out automatically by the transceiver. Also, with the above set-up you might find the automatic ATU ideal to flatten the SWR out to the band edges.

The twin band pass tuning controls now allow you to control the selectivity at both ends. With a single BPT you can cut either the low end or the high end but not both. With the twin BPT system one control can set the low end while the other sets the high end. The result is very effective QRM elimination. On the subject of interference rejection, the digital signal processor built into the IC-775 DSP does a magical job in removing heterodynes but not quite as good in removing random noise as compared to our external DSP unit. It's a start, but maybe ICOM needs to tap into

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some of the USA technology to get things right.

The most used thing on a transceiver is, without doubt, the tuning control. Not only is the mechanical smoothness of the control important, but also what goes on behind the panel with the electronics is important. I think that ICOM have both factors exactly right. The tuning knob is large enough to provide a good "feel". With the smallest tuning step of one Hz the knob has a 500 Hz per revolution tuning rate. At this rate, the tuning is silky smooth. Push the "TS" button and the speed increases ten times. Push it again and you select one kHz steps to get to the other end of the band in a hurry.

For some years now, ICOM have produced the best memory systems in the game. The IC-775 DSP continues and improves on this. There is now a triple band stacking register which means you can recall the last three frequencies and modes used on a particular band which, in conjunction with the second receiver, gives unsurpassed band monitoring.

The second receiver, or "Dual Watch" as ICOM call it, works well but perhaps not as well as others. It shares the IF strip and front end band filters with the main receiver which means two things. Firstly, whichever mode is chosen for the main receiver is the one you get on the second receiver. You cannot, for instance, listen on the opposite sideband or on SSB and AM at the same time. Secondly, you can only use the second receiver within the band

chosen for the main receiver. This might extend a MHz or so but you cannot listen to, say, 3.5 and 7 MHz at the same time. Perhaps not too serious but I can think of many cases where full coverage with the second receiver would be useful.

For transmitter tests on SSB, I used two fairly old ICOM microphones, an HM-12 and an SM-6. If you were to purchase an optional hand microphone for your new ICOM you would get an HM-36 which, as far as I can tell, has identical characteristics to the HM-12. Both of my old microphones performed very well with IC-775 DSP. If it proved one thing it was that these microphones can produce excellent quality and any criticism of them in the past must have been due to the transceiver used with them. With the DSP band pass optimised the transmitted quality was high class.

Keen CW operators are well looked after. Some of the features they will appreciate are the CW reverse mode and the audio peak filter which, combined with the DSP automatic audio peak filter, produces superb audio selectivity that makes even weak signals stand out from the crowd. The DSP CW filter has a band width of 80 Hz which must surely be the narrowest CW filter ever. Combined with the one Hz tuning steps, this is very easy to use. You can also plug your key into the front panel socket, no more fumbling around the back.

On Test

I carried out the usual series of

tests on the IC-775 DSP, starting with transmitter power output. RF power output is variable on all modes via the front panel "Power" control. Minimum power output was about seven watts on all bands. I measured a minimum power output of 200 watts on 10 metres and a maximum output of 225 watts on 80 metres. Again, the IC-775 DSP specification does not include a figure for transmitter intermodulation distortion. The same IMD tests were carried out that we have used on previous HF transceiver tests. We arrived at a figure of -27 dB. This is not as good as the figure we obtained on the IC-736 in the July 1994 review. In fact, it seems that transmitter IMD figures have improved very little over the years. With all the improvements we have had, such as high voltage FET final amplifiers, why are we still around the — 30 dB mark for average amateur transceivers?

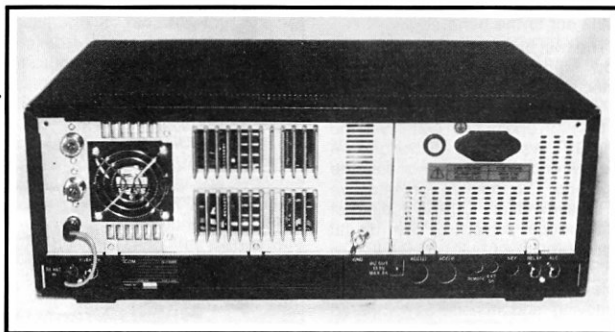
Receiver Tests

The first test was for "S" meter calibration. This was carried out at 14.2 MHz with the preamp switched off.

"S" Reading	μV input
S1	2.0 μV
S2	2.2 μV
S3	2.5 μV
S4	2.8 μV
S5	3.8 μV
S6	5.4 μV
S7	9.0 μV
S8	18.0 μV
S9	30.0 μV
+10 dB	120 μV
+20 dB	420 μV
+30 dB	1600 μV
+40 dB	5500 μV

The preamp gain was measured at 10 dB and the 6 dB steps of the attenuator were spot on. Preamp 2 was also spot on at 16 dB. AGC threshold was about 2.0 μV and increasing the signal generator to full output produced an audio output increase of less than one dB. AGC action was very smooth. The variable decay control could produce a range of 8 seconds from S9 (maximum delay) to less than 1 second at minimum delay. In between these, you should be able to find a setting that will suit your taste. It is also possible to switch the AGC off, which should please CW operators.

Receiver sensitivity was measured



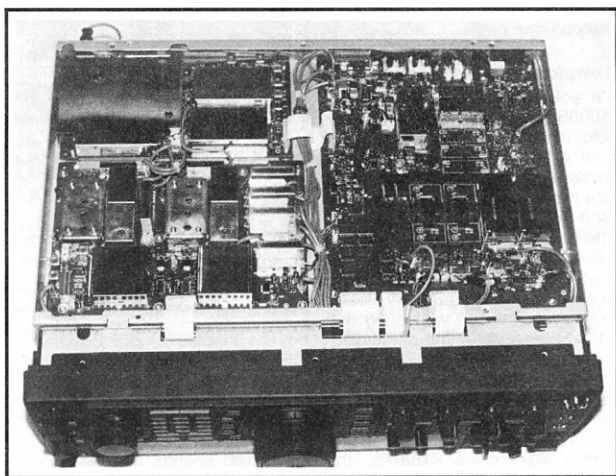
The uncluttered rear panel of the IC-775 DSP.

in the SSB mode at 14.2 MHz with the preamp switched out. It was 0.14 μ V for 10 dB SINAD, which is identical to the figure obtained with the IC-736 (*Amateur Radio*, July 94). AM sensitivity again was the same as the IC-736 at 2 μ V for 10 dB S/N (30% modulation). Both of these figures are spot on with the specified sensitivity.

The quality of AM broadcast reception was very much better than the earlier models. It seems that there is far less audio response tailoring employed in the IC-775 but, if you prefer bassy sounding audio, the "Tone" control will produce the desired result. It is a straight top cut control producing -4 dB at the centre and -8 dB full on, both at 2 kHz.

Audio power output measured, with the extension speaker socket terminated with an 8 ohm load, was 2.7 watts maximum and 2 watts for 10% distortion. This is a little less than the specified output. However, by using a 4 ohm speaker the output increases to a maximum of 4.2 watts and 3.0 watts for 10% distortion. Distortion with around 250 milliwatts output (a little above normal listening level) was only 0.6%. While this is an excellent figure, it is higher than I measured on the IC-736 at 0.3%.

Frequency readout accuracy and



Underneath view of the IC-775 DSP with the case removed.

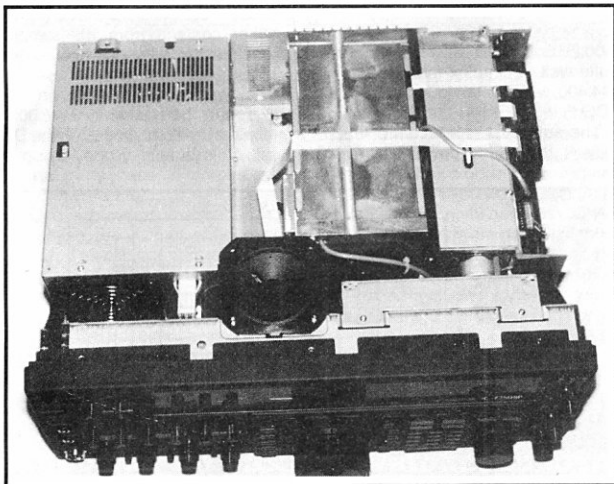
stability are superb. With the one Hz readout selected the total estimated error in the readout and total drift did not exceed ± 5 Hz. If the optional high stability crystal oscillator (the CR-282) had been installed, this would have reduced to about ± 1 Hz. In basis, if someone tells you that

you're on, then they must have access to some rather fancy measuring equipment.

With the exception of the transmitter intermodulation distortion, the performance of the IC-775 DSP is beyond reproach. As opposed to some earlier ICOM transceivers, I find that both transmitted and received audio quality are very much to my liking. However, I feel that a transceiver in this price range should have much better IMD performance. Commercial equipment is, in general, 10 dB better than the best amateur equipment. Why?

Instruction Manual

The instruction manual supplied covers both the standard and the DSP versions of the transceiver. The 63 page book has excellent coverage of the operation and functions of the rig. A full circuit diagram is included as a loose separate insert. There are dozens of line drawings to illustrate the operation procedures. However, if you want an overview of the facilities that the transceiver has, you will need to get hold of the advertising brochure. Perhaps ICOM assume you have obtained this before your purchase of the transceiver. So, I come back to my old grouch. Why not include a few pages of technical information that would at least cover



A top view of the IC-775 DSP with the case removed.

the features of the equipment?
Perhaps one day!

Conclusions

If you are in the market for a \$7000/\$8000 transceiver (half your luck) then the IC-775 DSP would have to be on your short list of possibilities. With the 200 watt power output capability there is really no need for a 400 watt linear, the difference is almost imperceptible.

ICOM have looked at the requirements of the amateur looking for a top line transceiver very closely and have come up with a rig that should please the most particular.

A good range of optional filters allows the demanding operator to optimise the transceiver for DX or contest use. Filters available include the FL-101, 250 Hz at -6 dB for narrow CW, price \$158.76; the FL-102, 6 kHz at -6 dB for wide SSB, medium AM or narrow FM, price \$117.60; and the FL-223 with a 1.9 kHz at -6 dB band pass for narrow SSB, priced at \$141.12. All of these filters are for use in the 9 MHz IF.

There are two filters available for use in the 455 kHz IF. These are the FL-53A, a 250 Hz CW filter priced at \$298.70; and the FL-222, a 1.9 kHz narrow SSB filter at \$346.92. While these filters are not cheap they are reported to have superb characteristics. It was unfortunate that no options were installed in our review transceiver.

What would I change with the IC-775 DSP if I had the opportunity? Not much, I have to admit. Perhaps the feature that disappoints the most is the second receiver. There is no provision to use the receiver outside the band pass filter used with the main receiver so you can really only use it within the confines of the chosen amateur band. Pity that ICOM don't offer an optional band pass filter for the second receiver as Yaesu have done with the FT-1000. Also, you are stuck with the same IF selectivity as you have chosen for the main receiver. I guess it's all a matter of price, but I think ICOM could well extend their options list to include some of the above facilities.

My thanks to **Daycom Communications Pty Ltd** for the loan of the review transceiver. ar

■ Transceivers

ICOM IC-22S Revisited Modifications to 48 Channels

Clem Maloof VK2AMA describes another method of getting even more out of this classic transceiver.*

The humble IC-22S 2 metre FM mobile transceiver has earned a special place in history. It was the first to offer a synthesised VCO, doing away with the large number of expensive crystals. It uses a rotary switch to change channels so you don't drive off the road, you simply count the clicks. Over the years there have been many modifications to improve the 22S, including extra channels.

Over some twenty years the author has been tinkering and fixing the occasional dry joint. One such modification was to add diodes to receive the Hornsby ARC Morse beacon on 144.850 MHz. This channel is represented by a dot on the dial.

This set was designed to operate from 146.00 to 148.00 MHz in +600 or -600 kHz offsets. It will, however, work quite well in simplex mode down to 144.400, which is the lower limit of the VCO.

The author uses a scheme which utilises the HI/LO power switch to

provide the 25 kHz or 50 kHz selection with the centre position being power OFF.

Here's how:

1. Remove the (brown) high power ALC biasing wire from the central terminal of the HI/LO switch and connect it to the Tx 9 V point on the main board, that is to the same point as the lower wire on the switch (white).
2. Remove the white wire from the switch and relocate it to the 9 V rail of the PLL/VCO board. It is connected to the common contact of the rotary switch (red wire).
3. Connect the reverse side of the D0 pin on the PLL/VCO board to the vacant central pin of the HI/LO switch.
4. Disconnect the purple wire (R149 wiper contact) from the switch, insulate the wire (no low power bias is now available).
5. The blanked out position on the dial can be used for 146,000, eliminating all 22 diodes on the D6 rail. This is achieved by using a

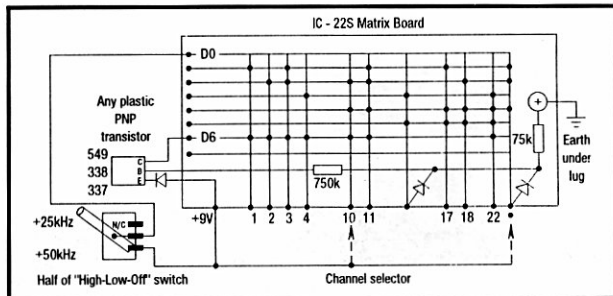


Fig 1 — IC-22S switching modifications.

Frequency	Octal	Binary	Frequency	Octal	Binary	Frequency	Octal	Binary
144.400	0	00000000	145.600	60	00110000	146.800	140	01100000
144.425	1	00000001	145.625	61	00110001	146.825	141	01100001
144.450	2	00000010	145.650	62	00110010	146.850	142	01100010
144.475	3	00000011	145.675	63	00110011	146.875	143	01100011
144.500	4	00000100	145.700	64	00110100	146.900	144	01100100
144.525	5	00000101	145.725	65	00110101	146.925	145	01100101
144.550	6	00000110	145.750	66	00110110	146.950	146	01100110
144.575	7	00000111	145.775	67	00110111	146.975	147	01100111
144.600	10	00001000	145.800	70	00111000	147.000	150	01101000
144.625	11	00001001	145.825	71	00111001	147.025	151	01101001
144.650	12	00001010	145.850	72	00111010	147.050	152	01101010
144.675	13	00001011	145.875	73	00111011	147.075	153	01101011
144.700	14	00001100	145.900	74	00111100	147.100	154	01101100
144.725	15	00001101	145.925	75	00111101	147.125	155	01101101
144.750	16	00001110	145.950	76	00111110	147.150	156	01101110
144.775	17	00001111	145.975	77	00111111	147.175	157	01101111
144.800	20	00010000	146.000	100	01000000	147.200	160	01110000
144.825	21	00010001	146.025	101	01000001	147.225	161	01110001
144.850	22	00010010	146.050	102	01000010	147.250	162	01110010
144.875	23	00010011	146.075	103	01000011	147.275	163	01110011
144.900	24	00010100	146.100	104	01000100	147.300	164	01110100
144.925	25	00010101	146.125	105	01000101	147.325	165	01110101
144.950	26	00010110	146.150	106	01000110	147.350	166	01110110
144.975	27	00010111	146.175	107	01000111	147.375	167	01110111
144.000	30	00011000	146.200	110	01001000	147.400	170	01111000
144.025	31	00011001	146.225	111	01001001	147.425	171	01111001
144.050	32	00011010	146.250	112	01001010	147.450	172	01111010
144.075	33	00011011	146.275	113	01001011	147.475	173	01111011
144.100	34	00011100	146.300	114	01001100	147.500	174	01111100
144.125	35	00011101	146.325	115	01001101	147.525	175	01111101
144.150	36	00011110	146.350	116	01001110	147.550	176	01111110
144.175	37	00011111	146.375	117	01001111	147.575	177	01111111
144.200	40	00100000	146.400	120	01010000	147.600	200	10000000
144.225	41	00100001	146.425	121	01010001	147.625	201	10000001
144.250	42	00100010	146.450	122	01010010	147.650	202	10000010
144.275	43	00100011	146.475	123	01010011	147.675	203	10000011
144.300	44	00100100	146.500	124	01010100	147.700	204	10000100
144.325	45	00100101	146.525	125	01010101	147.725	205	10000101
144.350	46	00100110	146.550	126	01010110	147.750	206	10000110
144.375	47	00100111	146.575	127	01010111	147.775	207	10000111
144.400	50	00101000	146.600	130	01011000	147.800	210	10001000
144.425	51	00101001	146.625	131	01011001	147.825	211	10001001
144.450	52	00101010	146.650	132	01011010	147.850	212	10001010
144.475	53	00101011	146.675	133	01011011	147.875	213	10001011
144.500	54	00101100	146.700	134	01011100	147.900	214	10001100
144.525	55	00101101	146.725	135	01011101	147.925	215	10001101
144.550	56	00101110	146.750	136	01011110	147.950	216	10001110
144.575	57	00101111	146.775	137	01011111	147.975	217	10001111

Chart 1 — IC-22S diode matrix frequency chart.

forward biased PNP transistor as a switch with its emitter on the 9 V rail and its collector on the D6 rail. The base is connected as shown in Fig 1.

Use a plastic transistor as it will minimise the risk of short circuits. When selecting a frequency lower than 146.00, such as 144.950, the D6 rail is low. The channel switch automatically removes the forward bias on the transistor switch. If more than one simplex channel is required

below 146.000, then each channel has to be isolated with diodes as drawn in Fig 1. In the author's case no additional diodes were required since only 144.950 was incorporated.

In conclusion, 48 out of the 50 valid 25 kHz channels are now available to the author. Not bad for the old rig!

A detailed print out of the diode matrix is included to assist you in programming the diode matrix board.

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■ Technical

Technical Abstracts

Gil Sones VK3AUI*

Variable Voltage Multiplier

An interesting voltage multiplier rectifier circuit, which can provide a multiple of from one to four depending on the setting of two switches, appeared in Technical Topics in the April 1995 issue of the RSGB *RadCom* (Radio Communication). The circuit is the work of Frits Geerligns PA0FRI who described its use in a grounded grid 400 watt linear amplifier. The linear had a power supply using a 1:1 transformer with this voltage multiplier to provide around 1300 volts for the anode supply which could be reduced to 650 volts or 325 volts when needed.

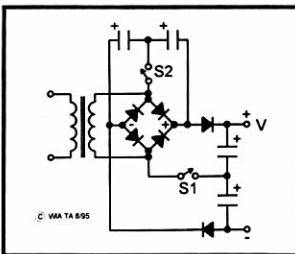


Fig 1 — Variable Multiplier Power Supply.

The circuit of the voltage multiplier is shown in Fig 1. By opening and closing S1 and S2 the circuit can be made to operate as a rectifier or as either a voltage doubler or voltage quadrupler. The switch settings are given in Table 1.

Table 1 — Switch Settings for Variable Multiplier

S1	S2	Multiple	Voltage Output
Open	Open	x1	V Volts
Closed	Open	x2	2V Volts
Closed	Closed	x4	4V Volts

The circuit requires the use of a transformer capable of the high

currents inherent in such a voltage multiplier circuit when capacitors of suitably high capacity are used. In the linear described, six electrolytics of 470 μ F 385 V working were used. In order to obtain the output voltage rating, four had to be connected in series as the output capacitance with the other two being connected to S2. The diodes used were type BY228 with a 1500 V 5 A rating. The transformer used was a mains isolation type. Do not be tempted to try the circuit direct on the mains. A supply such as this is dangerous enough even when using the isolation transformer. The hazard of 1300 volts and many amps is very real and should be treated with healthy respect.

Such techniques can be used to obtain voltage supplies from available transformers. They could be helpful to obtain, say, a 50 volt supply from a low voltage transformer or to obtain high tension supplies in old valve radios. In all cases high voltages should be treated with respect.

JS "Snap On" RF Current Probe

A simple and useful instrument was described by Jim Smith VK9NS in the June 1995 issue of the RSGB *RadCom* (Radio Communication). The device is a simple RF current probe using one of the snap-on ferrite cores designed for treatment of computer EMC problems. These cores are readily obtainable and eliminate the tricky job of splitting a toroid which used to be the main problem when making a snap-on RF current probe.

Jim VK9NS used the probe to check the performance of radials for a vertical antenna. Each radial should have a share of the current which flows into the earth radial system. After the radials have been installed the use of a snap-on current probe

means you can check that they work and have not been shortened by gardening or by corrosion.

The circuit of the probe is shown in Fig 2. The circuit is simple and the components are not unduly critical. The construction of the probe is shown in Fig 3. The hinge and clamping action are provided by two plastic clothes pegs. The meter used was a transistor radio tuning meter.

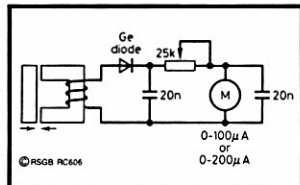


Fig 2 — Circuit Diagram of Current Probe.

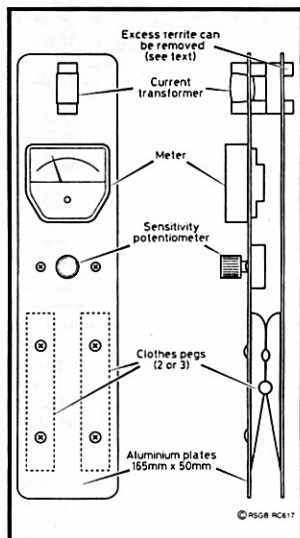


Fig 3 — Construction of Current Probe

The current transformer was wound on a split ferrite core of the type used to clip around computer cables for EMC purposes. The winding consists of 12 to 14 turns of 22 SWG enamelled copper wire wound on the top core. The core is wrapped with tape prior to the

winding and the turns are then covered and secured with more tape. The core is then glued with Araldite into a hole in the top plate. The other part of the core is glued to the bottom plate. The plates are attached to the clothes pegs with self tapping screws. Care should be taken that the epoxy does not dribble and glue the whole lot into one blob.

In use the clamp is applied around the radials and the relative currents noted. For comparison purposes a test radial laid out along the ground can provide a reference. The instrument can also be used to find stray resonance and induced currents

in wiring which may lead to a variety of problems.

The snap-on ferrites are available from a number of suppliers. If you were having difficulty in locating one then Daycom Communications Pty Ltd would be a likely source. The original used a Cirkit UF4 and one could be obtained from suppliers in the UK; however, the problems of such a long supply line should not be underestimated. The cores are designed for the treatment of computer EMC problems and should not be hard to locate.

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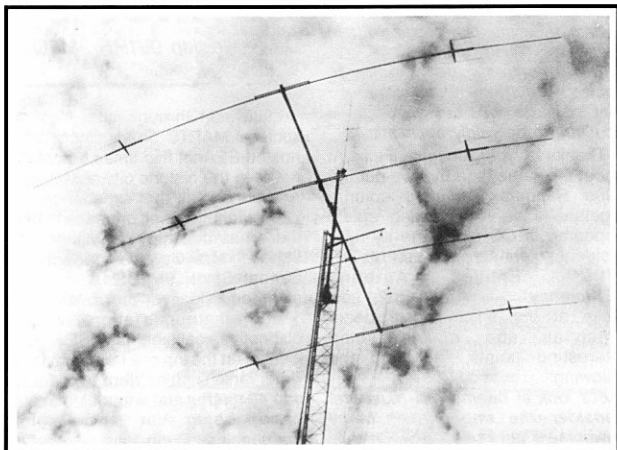
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"The two Rons posed the question of how good are trap tri-band antennas. As I see it the answer to that question depends on what you want from your antenna. If you want the versatility of three band operation with a useful degree of directivity, relatively compact dimensions and the capability of working a lot of good DX then you won't go far wrong with a trap tri-bander. However, if you expect to get 8 dBd forward gain on 20 metres, as regularly claimed by some advertisers, you are likely to be disappointed."

On moving into my present location in 1984, a 20 metre dipole was hastily installed in the roof space of the house. This dipole had an inverted V configuration with the apex at 28 feet. Using this antenna, regular contacts were made with VK, including many with one of the two Rons. About a year later a crank-up tower was installed with a trap tri-bander from an English manufacturer and substantial improvements in signal reports were expected.

It was disappointing. For a time both antennas were available for use and I could switch rapidly between the two. Following many tests, it was found that with the tri-bander cranked down to 28 feet the two antennas produced identical reports from VK.

the right direction. What would have happened if you had put up a rotary dipole in the same spot. To answer that question let's see what our old friend Ron (yes, another one!) G4JNH has to say.



The four element trap beam of one of the two Rons which prompted the question "Trap Tri-Band Beams — How Good Are They?" (see June 1995 *Random Radiators* column).

■ Antennas

Random Radiators

*with Ron Cook VK3AFW and Ron Fisher VK3OM**

Trap Tri-Band Beams — How Good are They?

We posed that question in the last edition of *Random Radiators*. We have received two replies both suggesting that tri-band beams may not be as good as the manufacturers would have us think. But, before publishing what our readers think, a few more thoughts from us.

Firstly, we were mainly referring to the twenty metre performance of these antennas. As they go higher in frequency, there is not much doubt that the performance relatively improves because there are less traps to absorb power and, of course, the boom of the antenna becomes longer in terms of wavelength. Still perhaps not up to a mono-bander, but maybe not too bad either.

Now, we can hear you saying, "I put up a three element trap tri-bander and it runs rings around any of the wire antennas I have ever had". That's probably very true, so let's look at a few of the reasons.

Firstly, you no doubt went to a fair bit of trouble to get it well up in air. Maybe you even bought a tower and put it up at 15 or 16 metres. And, of course, you use a rotator to point it in

With the tri-bander cranked up to 56 feet it showed an advantage of 2 or 3 dB.

Whilst it would be hasty to conclude from observations on one antenna that all trap tri-banders are the same, claims of 8 dBd gain for a three element trap tri-bander should be treated with some caution".

Thanks for your thoughts Ron. Some food for thought there. Now for our second letter from Felix Scerri VK4FUQ.

"The short discussion in the June Random Radiators column has reinforced my somewhat cynical belief that gain figures quoted in HF beam advertisements originate primarily in the advertising departments far from any antenna test range. Anyone who knows anything about Yagi design will know that, for any given boom length, there is a fixed theoretical limit to gain and even that assumes a fully optimised array with carefully tuned elements. This condition can be closely approached at VHF and UHF but, at HF, this is rather unlikely.

When one considers that an optimised three element Yagi gives slightly more than 7 dBd (not dBi) and a five element a little less than 10 dBd, then suggesting 10 dBd for a trap Yagi is rather silly. Losses in traps and compromises in other aspects of design, such as reduced boom length and even tuning for an improved front to back ratio, make the potential gain even less.

This is not to say that HF Yagis do not work well. There are plenty around that obviously do, but gain figures continue to be wildly optimistic."

Thanks for your thoughts, Felix. At about the same time that we put the June Random Radiators column together, a very interesting article appeared in CQ Magazine by their resident antenna expert, Lew McCoy W1ICP. Entitled **Antenna "Efficiency" — What is it?**, Lew looks at the efficiency of beam antennas and makes some interesting points, including the following:

"Let's look at beams. We must first consider the impedance. Many newcomers get hung up when they assume that the impedance of all beams is on the order of 50 ohms — or very close to that figure. They do

this because the antenna is fed with 50 ohm cable and produces a match or 1 to 1 SWR, or very nearly 1 to 1.

Keep this in mind, however. Nearly all Yagi-type beams have some sort of "matching" device in order to transform the actual or real impedance of the Yagi, up to 50 ohms. Let's examine this for a moment. A mono-band three-element beam using close-spaced elements, say one-tenth spacing, will have a rather low overall impedance. How low? How about 4 to 5 ohms? This is very possible with close element spacing. Of course, with modern transceivers we could never feed such an antenna directly with coax; the mismatch and SWR would be horrific, probably 8 or 10 to 1. So of course a matching network is installed to step up that very low impedance to 50 ohms. But what about efficiency?

A beam with a 5 or 10 ohm impedance is certainly going to have ohmic losses as an important factor. We have telescoping element connections, possible boom losses, the matching network itself, and so

on. Assuming that a 10 ohm impedance has 5 ohms radiation resistance and 5 ohms ohmic loss, then we are looking at 50 percent efficiency. In a beam with lots of traps, such as a three bander, there is no doubt that ohmic losses are going to increase so that the majority of power is lost as heat. The trap beam, if it is well designed and tuned properly, will probably still end up having about 6 dB gain compared to a dipole. But bear in mind that this 6 dB gain is for the useful power that gets into the beam. There is no real way of knowing what the ohmic losses are, but you can be assured that they are present. There is the old cliché that what you don't know won't hurt you, but I dislike seeing people live in a dream."

Well, that's it for another month. If you have any thoughts on trap tri-band Yagis, good or bad, please let us know. So it's goodbye from him and goodbye from me.

The two Rons

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■ International Events

SEAnet '94 Convention

David Rankin 9V1RH/9M2QV* and Sangat Singh 9M2SS

Malaysia, through the National society MARTS, had since 1971, hosted SEAnet five times before but never in the historic city of Malacca. And so with all that experience, the 22nd event was well organised under the Chairmanship of William Tan 9M2WT and Organising Secretary Sangat Singh 9M2SS. It was well attended too.

An amateur station with a distinctive callsign 9M0SEA was located on the top of a hill near a large water tank. Dipoles were used for 80 and 40 metres and a four element tri-band beam for the higher frequencies. There was also a two metre station used to talk-in some who could not find their way into the venue.

As usual, Friday, the first day, was set aside for arrivals, registrations and renewal of old friendships. The first official function was the Opening Banquet that evening. 250 people sat down to a sumptuous dinner Chinese style by courtesy of the Malaccan State Government. The Chief Guest was the Deputy Chief Minister of Malacca.

On Saturday morning everybody assembled for the official photo from around 0900 to 0945 hours but the group was so large that much manoeuvring was required to fit everyone into the picture. Then the tour of historic Malacca began. Four buses took delegates through the historic parts of the town, some of which go back to the sixteenth

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century. Later there was a short "pit stop" at one of the newest shopping malls only one year old. Quite a contrast.

In the afternoon, delegates visited

the shack of John 9M2GV who had an impressive antenna for 20 metres. A visit to the nearby rubber plantation proved very educational and was a novel experience for most.

The evening meal was a buffet, alfresco style, around the swimming pool at d'Village Resort. The weather was kind, the food and company excellent and, without doubt, every one enjoyed themselves.

All play and no work — what a marvellous prospect! But life is not like that and so on Sunday morning, after the usual Malaysian breakfast, about one hundred delegates gathered to listen to four short technical presentations and then to participate in the all important Plenary Session.

The first session of two technical papers was chaired by D D Devan 9M2DD. Colin Richards 9M2CF, of "chop stick helical" antenna fame, first spoke on Amateur Satellites, followed by Gordon VK2AGE describing his comprehensive HF/UHF BBS.

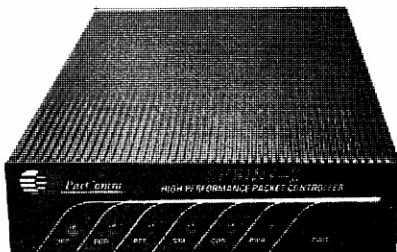
After a coffee break, the second session, under the chairmanship of "Jumbo" Godfrey ZL1HV, began.

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Ahmad 9M2DX talked about ELF (30-300 Hz) propagation, and the final paper was by Haji Rafaa Samsi of Telekom Malaysia Bhd (the Malaysian regulatory authority) on the topic of ISDN.

The Business Meeting was chaired by Andy Lingham 9M2PV/9M8PV who has recently shifted QTH to Malacca. Leading delegates from previous SEAnet Conventions were invited to join Andy at the head table to form a panel which consisted of Kun Mayuree HS1YL, Pornpun HS1GA, Thida HS1ASC, Selva 9V1UV, Saif S21A, Gerald V85GA, Anuar 9M2MO, Gary VK8GW and Keith YB5AQK.

Each leading delegate was asked to speak on venues for SEAnet which

resulted in S21A proposing India and HS1YL offering Southern Thailand.

From the floor, and following on from S21A's proposal, Suri VU2MY offered either Hyderabad or New Delhi in India. Hans Ehlers DF5UG/9M2QQ spoke on behalf of the Kerala Club and offered Kerala in South India. 9M2PV put the offers to the meeting and the house voted in favour of Southern Thailand.

Other matters discussed during the Plenary included the SEAnet Contest and selection of future venues.

After a chorus of "Auld Lang Syne", Andy 9M2PV declared the meeting closed at around 1300 hours. All delegates then adjourned for lunch and to prepare for the homeward journey after spending a most

enjoyable weekend in the company of fellow amateurs and their families.

SEAnet '94 attracted 250 amateurs, wives, children and girl-friends from 14 countries. Not surprisingly, the Malaysian contingent at 108 was the largest with Singapore next but well behind with 31 attendees. There was also good support from Japan with 23, Australia 21 and Thailand 16.

Despite poor propagation conditions, SEAnet continues on air at 1200z on 14320 kHz +/- QRM seven times a week. So join in and learn about SEAnet '95 at Koh Samui Island in Southern Thailand on the weekend of 17 to 19 November 1995.

**PO Box 14, Pasir Panjang, Singapore 9111*

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WIA News

Radio Amateur — Tape Recording Pioneer Dies

An American radio amateur who has been credited with the invention of magnetic audio tape recording and was awarded more than 500 patents for his work in the field, recently passed away.

He was Marvin Camras W9SX. He worked and taught at the Illinois Institute of Technology for more than 50 years, according to a *New York Times* report. As a student in the late 1930s, Marvin built a magnetic wire recorder and later experimented with magnetic tape, discovering that tape made splicing of recordings easier. His extensive series of patents were licensed to more than 100 manufacturers.

Marvin showed an early interest in electrical technology and an aptitude for building things. He is reported to have made a battery-powered torch at age four, working his way up to the construction of a transmitter three years later. Undoubtedly, his early interest in such things led to his success as an inventor of one of the 20th century's most pervasive consumer and commercial technologies. He was first licensed as W9SX in the late 1930s and

held the callsign until his recent death. (Thanks to Victorian Division President, Jim Linton VK3PC, for details on this item).

Operating Under the New Licence Conditions — Beware!

Amateurs need to take care when interpreting the new licence conditions, gazetted in June. There are a few things to remember.

For instance, now that Limited licensees are permitted to use FM on the 29.0-29.7 MHz band, some increased activity has been observed, with both Unrestricted and Limited operators appearing on the band.

However, operators must remember that FM operation, or modes 16K0F3E and 16K0G3E, must be confined between 29.0-29.7 MHz. No one — Full-calls, Limiteds or Intermediates — can use FM below 29 MHz.

In addition, operators are asked to observe the 10 metre band plan and stay clear of the amateur satellite downlink segment between 29.300 and 29.510 MHz. The Russian "Radio Sputnik" satellite series — RS-10, RS-11,

RS-12 and RS-15 — are currently active and can be heard at various times.

Please consider other users and keep your FM activities clear of 29.300 to 29.510 MHz. Satellite enthusiasts will thank you for it.

In another area, operators have raised questions about cross-band retransmissions — that is, retransmitting another amateur's signal from one band onto another. This has arisen because some popular brand commercial transceivers include a "cross-band repeat" function as a pushbutton feature. Such operation is permissible, **provided** you have the permission of the operator whose signal you wish to retransmit, that you announce that it is a retransmission and give **your** callsign at intervals of at least 10 minutes (for lengthy transmissions).

It is **not** permissible to leave your rig unattended while it's in cross-band repeat operation — this would be an unauthorised repeater station.

Don't confuse this with in-band (single frequency) packet radio digipeating, which is permissible as it is a "store-and-forward" operation.

■ Book Review

RSGB Radio Communication Handbook Sixth Edition 1994

By Dick Biddulph G8PDS

Published by the

Radio Society of Great Britain

Revue by Norm Eyres VK3ZEP

and Bob Tait VK3UI

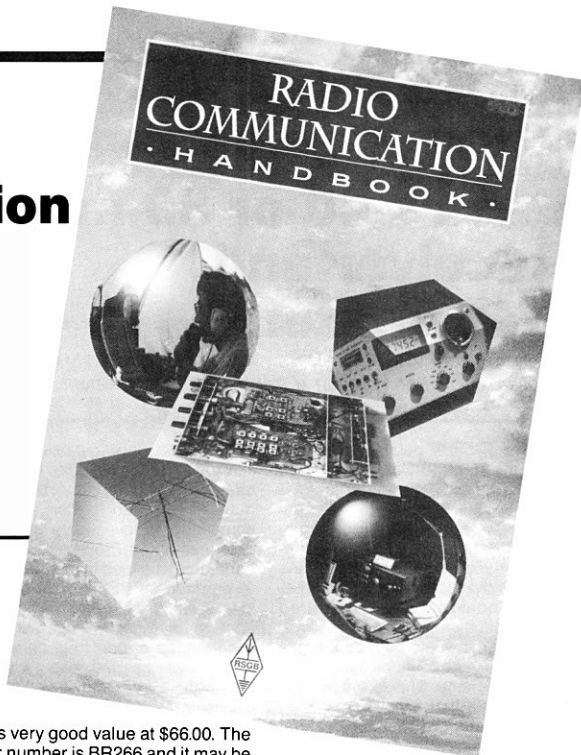
An improved and updated edition, this book would be an asset to any radio shack.

It comprises 22 sections covering every aspect of amateur radio. Some new features have been introduced, notably a chapter on building blocks which has been designed to encourage you to get out your pencil and paper and design something. The new chapter on construction and workshop practice is there to help you realise your project.

One very obvious improvement over the previous edition is the inclusion of many more photographs, and layouts for receivers and transceivers. The microwave buff is well catered for with many construction articles covering 1.3 GHz through to 10.5 GHz. Items covered include injection oscillators, multipliers, mixers and amplifiers, receiving converters and transverters.

The antenna section gives some practical construction projects for high efficiency horn feeds or dish feeds. An item that has been dropped from this edition is a separate mobile and portable section. This speciality is now incorporated into other relevant chapters.

This new edition is written with current technology in mind, unlike the previous edition which still included many valve projects.



It is very good value at \$66.00. The order number is BR266 and it may be available from your Divisional Bookshop. The review copy was

supplied by Daycom Communications Pty Ltd.

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WIA News

Reservation of Deceased Amateur Callsigns

Callsigns of recently deceased amateurs may once again be reserved for a period of two years. Following representations to the Spectrum Management Agency (SMA) at the WIA-SMA meeting on 18 May (see *Amateur Radio*, July issue, page 12), the SMA advised the WIA in late June that the RADCOM computer system is now able to handle the reservation of deceased amateurs' callsigns.

The SMA said that this will be a similar arrangement to that which

operated under the previous SMIS computer system. The callsign can only be reserved as having belonged to a recently deceased amateur, and cannot be "warehoused" in the name of another amateur.

A deceased amateur's callsign which has been reserved now only becomes available for re-issue after the two-year reservation period. In the event of an amateur's death, any request for the reservation of their callsign, or callsigns, must be made in writing to the closest SMA area office, address details for which are given in the current WIA Call Book.

The VXO should be enclosed in a shielded box with L1 individually shielded within the box to minimise hand capacitance effects. The oscillator minor components were rigidly mounted using a tag strip.

To couple the VXO to the receiver I connected G2 of the receiver MPF131 mixer to a Belling and Lee socket on the rear of the receiver case. A switch to disable the internal

VFO was installed. The BFO was retuned to 453.5 kHz to ensure that the receiver and transmitter were on the same frequency.

The VXO injects into pin 10 of the MC1496 mixer in place of the existing HF oscillator in the SSB transmitter. I will leave the send/receive switching to the individual constructor.

**51 Meeks Crescent, Faulconbridge NSW 2776*

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time in Luoyang City, Henan Province. Since then Chinese ARDF teams have joined in many international contests, and the Chinese team is one of the strongest teams at the world championships.

Meanwhile, in Japan ARDF also started early in the 1960s. Although we can find some articles or reports written by JA7AZP and JA1AYO about "Foxhunting", it is not exactly known who introduced the sport into Japan. ARDF games in the 1960s, which they called Foxhunting, used two or three foxes but the rules were much simpler than now.

In 1981 JARL visited CRSA and acquired the current ARDF International Rules and JA1AN and JA6AV joined in the games with China. Since then JARL and CRSA have held combined games on many occasions, usually once a year. After 1981 and in 1985, JARL had an ARDF competition called "Kanto Foxteering Competition" in Kunma which was completely based on international ARDF rules. At that time, seven

History

ARDF Then and Now

Wally Watkins VK4DO explains some of the history of Amateur Radio Direction Finding as a sport.*

IARU Region 1

It is widely known that radio direction finding tests were made by British and German amateurs sometime in the 1930s. Even though their testing of radio direction finding was very similar to current ARDF it was not exactly the same as the ARDF sport which we are now performing.

World War 2 made no further developments to this sport, and current ARDF rules were completed only in the 1950s, mostly by eastern European countries such as Yugoslavia, Czechoslovakia and Hungary. During these years, ARDF was called Foxhunting or sometimes Foxteering or more widely as **Radio Sport**. Present ARDF rules and principles are mostly based on a publication prepared by Mr Wojciech Niatykaza SP5FM (presently region 1 Vice-Chairman) sometime during the 1950s. The current ARDF rules were officially approved by the Region 1 conference in 1987 in the Netherlands and the name "**Amateur Radio Direction Finding**" became the official name of the sport.

Region 1 has had its permanent ARDF working group since 1987, with Mr Krzysztof Slomezynski SP5HS as its Chairman. Its activities include exchange of information relating to ARDF, development of ARDF

materials and answering enquiries from other IARU bodies. In Region 1, every two years the ARDF World Championships have been held. In 1992, the 6th Championships took place in Siófok, Hungary, and the 7th were held in 1994 in Sweden.

Region 3

China was the first country in Region 3 to develop ARDF in the 1950s as the name **Radio Sport** gained government support. The Peoples Radio Club of China in Beijing had a state team. In those days, however, a radio club in China did not mean a ham radio station.

Early in the 1960s China adopted international rules. They then developed and designed their own equipment and assembled 80 metre receivers (which were very big) using vacuum tubes.

The first ARDF national competition in China was in 1961 in West Beijing, near Fragrant Hill. In 1964 championships were held nationwide, in Harbin, Xian, Wuhan and Chengdu. ARDF was so popular at that time in China that many schools, universities and factories had their ARDF event. However, because of the cultural revolution, further development of ARDF was stopped ten years later. In 1978 China held its first ARDF event again, this

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Chinese competitors joined in the games using 144 MHz, their equipment creating quite an impression.

Almost every year, JARL and their local branches hold ARDF competitions and it is becoming very popular. Recently JARL has been taking part in all international events.

In Korea ARDF was introduced to hams in the early 70s, but it was Foxteering with two or three transmitters. Modern rules and further development were introduced by HL1IFM and HL1IE, from information supplied by JARL. In 1986 KARL sent their first team to the World Championships in Yugoslavia. Since then, every year, they have held national level competitions and the number of participants is growing very well.

As a result of attendance at the first Region 3 competition in China in 1993, a start has been made in the introduction of ARDF in both New Zealand and Australia. The first developments will be in Queensland where the name **Radio Sport** is being used in order to attract people other than amateurs into the sport.

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the serial
number
against
the WIA
stolen
equipment
register first.**

■ Interference

Pager Interference, Another Source

Stan Ellis VK2DDL explains another source of the dreaded pager interference on the two metre band.*

The incidence of pager interference to amateur two metre repeaters resulting from receiver front-end overload, where the repeater and the pager are co-sited or in close proximity, is well known. But there is a second cause which can occur when the repeater is remote from any pager and over which the repeater operator has no control.

This interference is a third-order intermodulation signal, generated when two or more pagers are co-sited and connected via a combining unit to a single aerial, which appears to occur when a non-linear component is present in the combining unit. Identification of the offending pagers can be complicated by two additional factors.

One is that, assuming that pagers may be licensed to operate at any multiple of 12.5 kHz between 148.0125 and 149.9875 MHz, there are up to 78 combinations of pager frequencies capable of producing a third-order intermod (2A-B) signal on ANY particular repeater input frequency in the amateur two metre band.

Similarly, signals can be produced either 12.5 kHz below or 12.5 kHz above a repeater input frequency, which, with deviation, can come within the pass band of the repeater receiver. At this point it is impossible to filter them out.

The second factor is that, once a combination of two particular pager frequencies is brought into service, it is likely to be duplicated at a number of pager sites in order to extend the range of access to customer pager units. Consequently, the offending pagers often have to be located by triangulation from various receiving points.

VK2RGL, a repeater established by the Great Lakes Radio Club Inc, at a site 40 km due west of Forster, on the NSW mid-north coast, operates at an input frequency of 147.975 MHz (output frequency of 147.375 MHz), the highest available two metre repeater channel. It has, since its inception, suffered this form of pager interference, although the nearest pager installation is over 20 km away.

Due to excellent co-operation from the SMA District Radio Inspector, Peter Bailey, and his staff, various sources have been tracked down and eliminated, in most cases by the insertion of circulators, or ring isolators, in the individual pager aerial leads. Unfortunately, because of periodical staff replacement at these sites, which may result in the removal of these additions, and also because of the establishment of new services with new pager combinations, this form of interference has recurred.

The repeater, at an elevation of 665 metres, has particularly good coverage to the south, and is frequently accessed by Sydney stations. There is also at least one pager site in that direction still producing an interfering signal. Its location is out of the ambit of the DRI and has been referred to the SMA Sydney office, which is currently investigating a possible source at Mt Elliot, near Gosford.

However, given the potential for interference illustrated above, it would appear desirable for the SMA to make the insertion of circulators mandatory in all cases where two or more pagers are co-sited and thus avoid this problem.

*President, Great Lakes Radio Club Inc.
ar

WIA News

President visits NZART

In June, Wireless Institute of Australia Federal President, Neil Penfold VK6NE, attended the annual conference of the New Zealand Amateur Radio Transmitters (NZART), the WIA's counterpart in New Zealand. He was accompanied by ACT Division Federal Councillor, Richard Jenkins VK1RJ.

Each other year, WIA Federal representatives attend the NZART annual conference, while NZART representatives attend the Institute's annual Federal Convention in the intervening years. This year it was the WIA's turn to go to New Zealand.

Neil Penfold and Richard Jenkins were to report to the Federal Council at the July Extraordinary Convention.

Among items of interest, Neil Penfold noted the extensive repeater linking in New Zealand, an aspect of amateur radio which is yet to get under way in Australia. Perhaps the pending new repeater Technical Licence Specifications may clear the way this year.

The NZART is preparing to undertake some significant amateur radio administration tasks previously carried out by the New Zealand regulatory authority, the Ministry of Commerce. This looks like including the issuing of licences and callsigns, among other administrative services. The NZART has set up a special not-for-profit company to take on the task.

Another item of note is NZART's Youth Award Program, which recognises particular achievement by a young amateur. This year's award went to an 11 year-old girl whose interest is satellites, and who had been making contacts with the Russian astronauts aboard the MIR spacecraft.

Neil Penfold thinks such a Youth Award Program might be considered by the WIA for Australia. If you have any ideas, contact your Division's Federal Councillor.

ALARA

Sally Grattidge VK4SHE*, ALARA Publicity Officer.

YLRL Sponsored Contest — Howdy Days

This contest will take place from 1400 UTC on Wednesday, 13 September to 0200 UTC on Friday, 15 September 1995. Eligibility All licensed woman operators.

Procedure Call "CQ YL"

Operation All bands, all modes. No crossband, repeaters or nets. A station to be worked once on each band. Max power 750 W CW, 1500 W PEP SSB.

Logs Operating breaks must be indicated. Date, time, band, callsign RS(T) number sent and received, YLRL status (member, non-member), score claimed and signature.

Scoring Two points each YLRL member, one point each non-YLRL member, no multipliers.

Duplicates Penalty for duplicate contact is loss of that contact plus three equal contacts.

Awards Top scoring YLRL member receives her choice of YLRL pin, charm or stationery. Top scoring non-YLRL member receives a one-year YLRL membership certificate.

Suggested frequencies: CW — 3.540 to 3.725, 7.040 to 7.070, 14.040 to 14.070, 21.120 to 21.150, and 28.150 to 28.200 MHz. SSB — 3.940 to 3.970, 7.240 to 7.270, 14.250 to 14.280, 21.380 to 21.410, and 28.300 to 28.610 MHz.

Send Logs to: Carla Watson WO6X, Palo Verde Drive, Sunnyvale CA 94086. Logs

must be postmarked no later than 16 October 1995.

Note Band allocations in other countries differ from USA. NA-YLs should look for DX-YLs in other parts of the bands especially on 80 and 40 metres.

Help!

Helen Sterrett KC7BMY is interested in YL history. She particularly wants to know the names and callsigns of the first women licensed in various areas around the world. If you are a "first" in your area, or know of one, please contact Christine VK5CTY or any ALARA member. ALARA is collecting YL history for the Federal Historian, and any information will be passed to John Edmonds and to Helen.

Congratulations

Congratulations to Dorothy VK2DDB for gaining second place in the 12th BYLARA Contest. Quite an achievement considering DX conditions at this time. Watch for this contest next year (open to all YLs, OMs and SWLs) on 11 and 12 February 1996.

Travelling North

Maria VK5BMT is in north Queensland and has been heard on the Townsville Ladies Net, and the VK4YL net. Last known relaxing and listening to the birds in Mount Spec National Park.



Mildura Hamfest May 1995. ALARA was on display represented by (left to right) Marilyn VK3DMS, Jean Day, Angela VK3MDA, Christine VK5CTY and Tina Clogg.

Welcome

To new member Marian VK3FMR.

DX

The 222 net (Mondays, 14.222 kHz at 0600 UTC — call in from 0545 UTC) boasts a total of 217 YLs and 57 countries.

Valery Postnikov from Kazakhstan is the only Russian to gain the BYLARA Award. He is looking for YL contacts worldwide and is interested in YL awards. Listen for him on Saturdays and Sundays on 21.230 MHz between 1000 and 1100 UTC. He uses home brew equipment, 50 watts and a Delta loop antenna. He is ex-UL7023406/ex-UN7PJQ, and would like everyone to listen out for him.

DRL News

The Rockhampton District Radio Ladies had a great weekend in Gladstone in June. They were there to see Pam VK4PCP performing in "Les Misérables" and a good time was had by all.

NQ Convention

The NQ convention will be held in Townsville on 15, 16 and 17 September 1995. Hope to see lots of YLs there. There has been plenty of publicity about this.

A. J & J COMAN ANTENNAS

6M std 6 ele 40 mm boom	\$216
2M colinear 2 5/8 7dbd	\$ 97
12 ele 2M broad B/width	\$135
160M vert top loaded	\$327
6 M col/in 6 dbd rad 4.NEW	\$157
6 ele 6 M N.B.S 50 mm Boom	\$310
Duo 10-15 M	\$295
3 ele 15 M	\$199
3 ele 20 M	\$333
20 m log-yag array 11.5 dbd	\$755
M B Vert NO TRAPS 10-80 M	\$265
Tri band beam HB 35 C 5 ele	\$690
40 M linear loaded 2 ele	\$516
13-30 M logperiodic 12 ele	
all stainless/steel fittings	\$951
70 cm beam 12 ele bal/Feed	\$102
23 cm slot fed 36 ele brass cons	
s/solder-assembled. 18 dbd	\$170
80 m top load/cap/hat vert.	\$260
3 ele 40m l/cap hats 60mm boom	\$860
2 m 144.100 2.2 wavelength boom	\$145

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Call **ANDY COMAN VK3WH.**
LOT 6 WEBSTERS ROAD,
CLARKFIELD 3429
PHONE 054 285 134

Registration forms to be returned by 25 August at the latest.

Friday YL Net

Conditions have not been good on 15 metres and Bev VK6DE has not had too many YL contacts lately on 21.188 MHz. Don't forget this net at 0400 UTC. Things will improve!

ALARAMEET

ALARAMEET will be held in Perth, WA on 28 and 29 September 1996. Bev VK6DE is the ALARAMEET Co-ordinator. The program at this stage is as follows:

Friday Night — An informal dinner.

Saturday Morning — Official registration and photographs, followed by a buffet lunch at the main venue.

Saturday Afternoon — Visit to the Wildflower Festival at Kings Park.

Saturday Evening — A social occasion with a buffet meal.

Sunday Morning — Bus trip to the ferry cruise to Fremantle with a tour of the market, drawing of the "Special Effort" and official close. More information later, but it is sounding good already. Be there.

**C/o PO Woodstock, QLD 4816*

ar

AMSAT Australia

*Bill Magnusson VK3JT**

National co-ordinator

Graham Ratcliff VK5AGR

Packet: VK5AGR@VK5WI

AMSAT Australia net:

Control station VK5AGR

Bulletin normally commences at 1000 UTC, or 0900 UTC on Sunday evening depending on daylight saving and propagation. Check-ins commence 15 minutes prior to the bulletin.

Frequencies (again depending on propagation conditions):

Primary 7.064 MHz (usually during summer).

Secondary 3.685 MHz (usually during winter).

Frequencies +/- QRM.

AMSAT Australia newsletter and software service

The newsletter is published monthly by Graham VK5AGR. Subscription is \$30 for Australia, \$35 for New Zealand and \$40 for other countries by AIR MAIL. It is payable to AMSAT Australia addressed as follows:

AMSAT Australia

GPO Box 2141

Adelaide SA 5001

Phase 3D Launch Delayed Slightly

It has been reported by AMSAT News Service that the launch of Ariane 502, the mission scheduled to carry phase 3D aloft, has been re-scheduled to 29 May 1996 from 3 April 1996 as originally planned. The change was caused by a delay to an earlier planned launch.

Viewing Satellites... (With a Difference)

The recent historic docking of the space shuttle Atlantis with the Russian

space station MIR fell at a time which allowed only very limited pre-dawn viewing opportunities in Australia. I haven't heard of anyone who actually saw it in VK. Viewing conditions were much more favourable in USA. The various Internet newsgroups have been buzzing with reports of sightings (it's interesting to note that most of the respondents referred to it as "The Atlantis/MIR Complex".....Oh, well).

One such report stood out from the rest. It came from Ron Dantowitz of the Hayden Planetarium at the Museum of Science, Boston, USA. In part he said, "We have been successful in tracking MIR/Atlantis in our twin 12" SCT77" refractor set up. We wrote our own software to drive the scopes in RA/Dec. We had the MIR/Shuttle complex rock steady at 100x in the 12" Schmidt Cassegrain, and it was fantastic! Easily saw six solar panels, the modules of MIR, and the space shuttle Atlantis docked at one end! The shuttle was easy to see hanging there on the MIR complex, and the solar panels were larger and brighter than I thought they'd be. While practising on other satellites we started doing some fun stuff. We locked our computerised scope onto a rocket booster that was in Earth's shadow, and tracked it.

Looking in the eyepiece it's invisible (just stars) but then the computer beeps (when the object is supposed to come into sunlight) — and — Whoosh! There it appears, in the centre of the eyepiece. First grey, yellow-orange (penumbra) then white! The satellites are even centred at 200x, and we expect to be able to go higher".

Support Phase 3D.

Here is a novel way to support the new Phase 3d satellite. It has been floated by

Ron Broadbent G3AAJ on the suggestion of a number of AMSAT-UK members. It may not appeal to all but it is worthy of mention. The idea is that recognition would be given for larger donations to the Phase 3d Building Fund by engraving the names or call signs of the donors on an aluminium plate to be attached to the spacecraft prior to launch. The rules are simple, 150 pounds Sterling and above for individuals and 5000 pounds Sterling for companies, organisations or universities. The launch has been delayed a little but is still only a matter of months away. ALL donations are welcome and will receive a certificate if requested. In connection with the above appeal send donations to AMSAT-UK, c/o Ron Broadbent MBE G3AAJ, 94 Herongate Rd, Wanstead Park, London, E12 5EQ, England.

FAQ (Frequently Asked Questions Department) New Novices, New Regulations and Amateur Radio Satellites.

With the advent of the long awaited changes to the regulations and the new Novice Limited licence category, we have seen a welcome influx of new stations on the air. Packet radio is one mode that seems to have already attracted its share of newcomers. This is understandable due to the high digital component in the new Novice Limited licence. I have been asked the following question several times already at our radio club, and inevitably the question will be asked again. Can Novice or Novice Limited licence holders operate through the OSCARS? Well, life wasn't meant to be easy and, as far as I can ascertain, the answer is quite simple, YES and NO!

YES, in as much as the regulations do not expressly forbid such operation. The official SMA attitude appears to be that a satellite transponder "down-linking" a Novice's signal in another band does not contravene the regulations. Effectively, however, the answer is NO. The Novice Limited licence does not allow any operation in any band segment containing an amateur satellite uplink segment.

In the case of the Novice licence, the 15 metre band allocation overlaps the mode "K" and mode "T" uplink segments used by some of the Russian RS series satellites. Theoretically, a Novice licensee could operate through these transponders but they are rarely, if ever, turned on these days. Since RS-15 will likely be the last RS satellite in the series, we have probably seen the last of any opportunity for the Novice licensees to take part in working the RS satellites.

The proposed frequency plan for Phase 3d lists a 21.210 MHz to 21.250 MHz receiver. It remains to be seen how this will be switched into the matrix and one would assume it would have a fairly low priority. As far as I know, with the possible exception of the SunSat "Parrot" repeater (see below), this represents the only hope on the horizon for Novice operators to work the OSCARS.

OSCAR-13 Countdown

Best estimates still put the AO-13 re-entry at early to mid December 1996. That gives us about 15 months of operation. Get in there and use it!

STSorbis Plus.

A new version of this program is appearing around the traps. It has a host of new features including a 3D map (satellite's eye view). It is an interesting program but in no way compares to InstantTrack or QuickTrack for amateur use. It is very colourful and would be useful to "amaze your non-amateur friends". Be warned, it needs a FAST computer.

Club Corner

Hervey Bay Amateur Radio Club Inc

Special Event Station V150PEACE — 1 August to 31 October 1995

This year's call sign is rather spectacular in that it is the first time that a nine character call has been issued from Australia and, indeed, perhaps from anywhere. We have departed from our "Whale Series" Award this year because of the special significance of 50 years since the ending of hostilities in WW II. But this in no way means that any of us condone the "Act of War". To the contrary, this special event has been initiated to commemorate the men, women and children who lost their lives in acts of aggression throughout the war years.

We hope to be on all HF bands, as well as six and two metres, where propagation permits, for the entire three months realising, of course, that some of these bands will be local only. Some preferred frequencies will be 1.820, 3.615, 7.058, 10.150, 14.215, 18.120, 21.195, 24.945, 28.580, 50.110 and 144.100 MHz SSB, as well as the usual CW frequencies, shifting off recognised call frequencies as and when required. Packet frequencies will be notified on BBSs worldwide, with correct addresses.

Keplerian Elements

Some keplerian element sets are still coming through from some sources in the "new" format with odd characters, usually + signs here and there. They cause the checksums to be rejected by some tracking programs. The keps originating from K5ARR are OK.

SunSat Update

In the May column I mentioned the SunSat project under development in South Africa. A few more details are coming to hand. Analog capabilities include a "PARROT" system on two metres which will record and replay up to eight seconds of speech. A 2.4 to 1.3 GHz linear transponder will be open for TV experimentation. Digital capabilities include a BBS and mailbox, a simple two metre 1200 baud packet system and a mode "J" 9600 baud FSK device. An imaging system will be connected to all downlinks. The orbit will be polar elliptical, about 100 minutes period. Its height will range from 400 to 840 km.

*359 Williamstown Rd, Yarraville VIC 3013
Packet: VK3JT@VK3BBS.#MEL.VIC.AUS.OC
CompuServe: 100352,3065
ar

The normal \$US5.00 will help us with the printing costs and airmail return postage for the award; for QSL only, an SASE or one IRC. Address to the QSL Manager, HBARC Inc, PO Box 829, QLD 4655 Australia.

Jim White VK4BX
Secretary

Eastern and Mountain Districts Radio Club

At the 1 September meeting of the EMDRC, David VK3UR will be giving a talk on Internet. Readers who have attended David's talks on other subjects will be well aware of his ability to lecture. For this talk, David intends to project the computer display on to the theatre screen to enhance the live demonstration. If you are interested in learning about this medium, this lecture is not one to be missed. Visitors are always welcome. For more information please contact Jack VK3WWW at home on 03 9873 2459.

In early September, the EMDRC are planning another balloon launch. For this launch, the payload will be Radiation Monitoring Equipment. We are expecting the launch to take place shortly before the French tests. Another balloon is planned to go up shortly after the completion of the

tests. For more information, please write to EMDRC Inc, PO Box 87, Mitcham, VIC 3132.

Radio Amateur Old Timers Club

Members of the RAOTC are reminded that the winter QSO Parties will be held on 80 metres on Monday, 7 August, and on 40 metres on Monday, 14 August. Both Parties will run from 0800 — 1000z on the usual frequencies.

John Tutton VK3ZC
ar

Update

80 Metre CW QRP Transmitter

Peter Parker VK1PK, author of this article which appeared on pages 4 to 7 of the July 1995 issue of *Amateur Radio* magazine, advises of the following errata:

1. The 6.8 V zener diode in Fig 2, the schematic diagram, is shown the wrong way around. The layout diagram, Fig 3, is correct.
2. On Fig 3, the components layout diagram, the left hand lead going to the T/R switch S1a should connect to the free end of the 270 Ω resistor, not to the 12 V rail.
3. For use with a direct conversion receiver, S1a should be omitted and a link placed across x-y (on schematic) so the oscillator is permanently on. This was alluded to in the text, but was perhaps unclear.

Apologies for any inconvenience, though the worst that could have happened is a blown-up zener.

It might be a good idea to correct your copy of the July 1995 issue of *Amateur Radio* now.

QSLs from the WIA Collection

Ken Matchett VK3TL advises that the late VK3BRC's surname was incorrect in his column in last month's *Amateur Radio* magazine. The last sentence under *Thanks* on page 43 should read "Also to the family of "SK" Ron Cannon VK3BRC."

Ken apologises for this error.

How about correcting your copy of the July 1995 issue of *Amateur Radio* now?

**Have you advised
the SMA of your
new address?**

AWARDS

John Kelleher VK3DP — Federal Awards Manager*

"Pobeda" (Victory) Award

From Russia, details of the "Pobeda" (Victory) Award. This Award is sponsored by The Krenkel Central Radio Club of RF on the occasion of 50 years of Victory and Peace, 1945-95.

The Award is available to all licensed radio amateurs and SWLs for contacting radio stations in Russia, during 1995. There are no band or mode limitations. The requirement for WW2 veterans is 10 different QSOs. For other radio amateurs, 50 QSOs with different radio stations of Russia, including five QSOs with radio amateurs who are veterans of WW2.

The "Pobeda" Award is issued free of charge. Please send applications, signed and confirmed by two radio amateurs, to The Krenkel Central Radio Club of RF, PO Box 88, Moscow, Russia.

Accompanying this information is a letter from Professor Yu Zubarev, President of the above Club, imploring amateurs the world over to maintain communications with PO Box 88 in Moscow. While admitting that the Union of Radio Amateurs of Russia (SRR) has some membership, Professor Zubarev maintains that the old faithful, Box 88, is the best and most reliable source of business and information from the present Russia.

Until word to the contrary is received, I will continue to correspond with the old faithful.

VI50PEACE

From 1 August to 31 October, 1995, Hervey Bay Amateur Radio Club will be transmitting a message of peace around the world as part of the *Australia Remembers* commemorations. Operations will continue 24 hours a day. The certificate and QSL card for this operation are of excellent quality, so your participation is recommended.

Grid Square Standings

Here are the Grid Square Standings as at 28 June 1995.

Band	Callsign	Grids
2 Metres	VK3BRZ	42
6 Metres	VK3BRZ	67
	VK3TU	62
	T30JH	56
10 Metres	VK2CMV	104
15 Metres	VK2CMV	104
	VK4ARB	89
20 Metres	VK4ARB	143
	VK3DP	109
	VK2CMV	104
40 Metres	VK2CMV	104
70 cm	VK3BRZ	19
23 cm	VK3ZJC	13

VI50PEACE



Celebrating the 50 year Anniversary of the Cessation of Hostilities of World War II and in remembrance of the men, women and children who lost their lives during time of war.

AWARDED TO

AWARDS MANAGER

ACTIVATED BY HERVEY AMATEUR RADIO CLUB, QUEENSLAND AUSTRALIA

The attractive VI50PEACE certificate is in dark green and cream, with a touch of gold, and measures 280 by 226 mm.

DICK SMITH ELECTRONICS

UNBEATABLE VALUE!

The deluxe 2m/70cm dual-band hand-held Transceiver that offers easier operation and more features than ever before is still available at an unbelievably low price!

The Yaesu FT-530 provides a flexible dual receiver facility with separate volume and squelch controls, allowing you to listen on two frequencies in the same band or one frequency on both bands! Plus, the exclusive Australian version features full 70cm band coverage (420-450MHz), selectable Auto Repeater Shift on both 2m and 70cm (suits Australian band plan), and extended receiver coverage as standard. Two VFOs and 41 tunable memories per band are provided, together with keypad or dial frequency entry, seven selectable tuning steps and a one-touch CALL channel. The dual 5.5-digit LCD screen is back-lit for easy viewing and includes many functional indicators plus separate signal/P.O. bargraphs for both receivers. An LCD voltmeter function is provided so you can even monitor your battery's performance under load and estimate remaining battery life.

Other top features include: Inbuilt CTCSS encode/decode, CTCSS scanning, an auto battery saver (ABS) for extended battery charge life, a cross-band repeater facility and an inbuilt clock with alarm and snooze functions. Also provides VOX circuitry for use with the optional YH-2 headset, a user-replaceable Lithium back-up battery, and DTMF selective calling and paging. A DC supply jack allows simple transceiver powering and NiCad charging, with RF output in four selectable steps up to 5W at 12V. The FT-530 comes complete with an ultra high-capacity 1000mAh NiCad battery, belt clip, carry case and approved AC charger. Cat D-3620

Specifications

Frequency range:

Transmit:

Receive:

Current consumption:

Auto power off

Standby (saver on)

Dimensions:

Transmitter:

Power Output:

RF Power Output:

Receiver:

Sensitivity:

Selectivity:

Audio Output (12V):

2 Year Warranty

144-148MHz, 420-450MHz

130-174MHz, 420-500MHz, 800-950MHz

150uA

16.8mA (both bands)

55(W) x 163(H) x 35mm (D)

5, 3, 1.5, 0.5 (at 12V)

2.0W (2m) 1.5W (70cm)

(Supplied 7.2V 1000mAh NiCad)

2m: < 0.158uV, 70cm: < 0.18uV

(Ham bands only, 12dB SINAD)

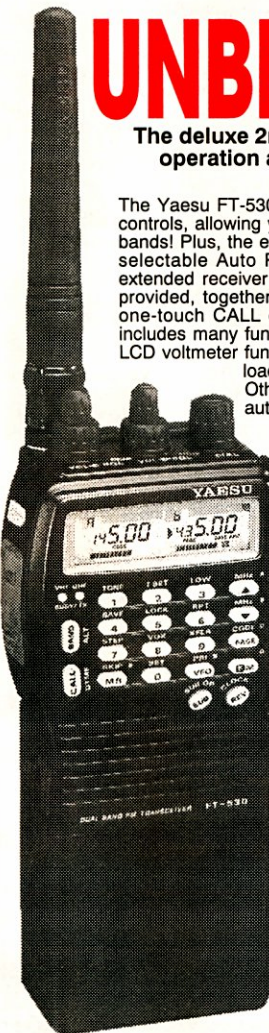
>60dB

300mW at 8 ohms (at 12V)



\$699

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Don't go mobile without a Yaesu Mobile Transceiver!

Whether you're going bush or operating around town, a quality mobile transceiver from Yaesu delivers the best performance.

FT-2200 2m Mobile Transceiver

The FT-2200 is a compact, fully featured 2m FM transceiver providing selectable power output of 5, 25 and 50 watts, and includes the latest convenience features for more enjoyable mobile or base station operation. Built around a solid diecast chassis, it provides 49 tunable memories, a large variety of scanning modes, an instant recall CALL channel, 7 user-selectable channel steps from 5kHz to 50kHz and is just 140 x 40 x 160mm (not including knobs). Backlighting of the large LCD screen, knobs and major buttons is even automatically controlled to suit ambient light conditions. Also provided is a 38 tone CTCSS encoder, DTMF based paging and selective calling with Auto-Page/Forwarding features, and 10 DTMF auto-dial memories. The LCD screen provides a highly legible bargraph Signal/P.O. meter plus indicators for the various paging and repeater modes. An optional internal DVS-3 digital recording/playback board can also be controlled from the front panel, giving even greater messaging flexibility. Supplied with an MH-26D8 hand microphone, mobile mounting bracket and DC power lead.

Cat D-3635

2 year warranty \$699



FT-5200 2m/70cm Mobile Transceiver

The FT-5200 uses the latest innovations in compact cross-band full-duplex and detachable front-panel design for brilliant mobile performance. It has 32 tuneable memories, a built-in antenna duplexer, dual full-frequency LCD screen (with signal strength/power output bargraphs for each band), 8-level automatic display/button lighting dimmer and dual external speaker jacks (one for each band). A thermally-activated fan allows up to 50 watts output on the 2-meter band and 35w on the 70cm band. Plus, scanning features include programmable scan limits, selectable scan resume modes, memory skip, priority monitoring and one-touch recall CALL channels. In addition, 6 user-selectable channel steps are provided and a FRC-4 DTMF paging selcall option lets you program a three-digit ID code so you can be paged by other transceivers, or page up to 5 other stations yourself. An optional YSK-1 remote panel lets you relocate the main rig (under the front seat, for example) and mount the control panel on the dash. The FT-5200 comes with hand-mic, mobile mounting bracket and DC power lead.

Cat D-3110

2 year warranty \$1399



Yaesu FT-840 HF Transceiver

The FT-840 HF mobile transceiver sets the new standard for high performance in affordable transceivers. Covering all HF amateur bands from 160m-10m with 100w P.E.P. output, and with continuous receiver coverage from 100kHz to 30MHz, the FT-840 provides SSB/CW/AM operation (FM optional), 100 memory channels, a large back-lit LCD screen, two independent VFOs per band, an effective noise blanker and an uncluttered front panel, all in a compact case size of just 238 x 93 x 243mm (WHD). The FT-840 provides an SSB Speech processor for greater audio punch, and IF Shift plus CW Reverse to fight interference. Dual Direct Digital Synthesizers ensure clean transmitter output and fast Tx/Rx switching, while the low noise receiver front-end uses an active double-balanced mixer and selectable attenuator for improved strong signal handling. An extensive range of accessory lines are available, including the FC-10 external automatic antenna tuner, so you can customise the FT-840 to suit your operating requirements.

Cat. D-3275

2 year warranty \$1595





(FT-815 Pictured)

GET ACTIVE ON 70cm

Handheld Way Below Cost!

Yaesu FT-815 Deluxe 70cm Handheld

While stocks last, grab a deluxe FT-815 at a great bargain price! Ideal for Novice and Novice Limited licencees.

Covers 430-450MHz, with selectable step sizes, 41 memories, 2 VFOs, and a CALL channel memory. Includes Keypad and dial frequency entry. Back-lit LCD screen and keypad, DTMF paging, variable Auto Battery Saver, Auto Power off, VOX, and AC power socket. Complete with long life 1000mA/H NiCad (1.5w RF out), carry case, belt-clip and AC charger.

Cat D-3615

Only
\$399
2 year warranty



High Performance 2m/70cm Base Station Antennas

Our range of top-name Brainer base station antennas offer outstanding quality and exceptional value. They are stacked collinear types providing high gain, wide bandwidth and a low radiation angle for extended range. The fibreglass reinforced polyester (FRP) outer tubing random and gasket seals provide excellent all-weather operation, and they are supplied with compact ground-plane radials for a clean radiation pattern. Stainless-steel mounting hardware ensures a long trouble-free life. They also feature comprehensive instruction sheets to make installation and set-up easier. Both come with a 1 year warranty.

2m/70cm Mobile Antenna

The ST-7500 is a high quality medium-sized dual-band antenna that uses a ground independent design and tiltable stainless steel whip structure to provide excellent mobile results. It's just 1m long, yet provides approximately 3dB gain on 2m and 5.5dB on 70cm with a maximum power rating of 150 watts. Requires an SO-239 antenna base or SO-239 magnetic base

Cat. D-4810

\$8995

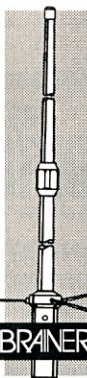


2m/70cm Hi-Gain Mobile

The ST-7800 is our best long-range, dual-band mobile antenna providing high gain (4dB on 2m and 7.2dB on 70cm), while only 1.5m in length. It incorporates an inbuilt tilt-over mechanism and has a maximum power rating of 150 watts. Requires an SO-239 antenna base.

Cat. D-4815

\$12995



2m/70cm GST-1

Frequency: 144-148MHz, 430-450MHz
Gain: 6dB on 2m, 8dB on 70cm
Max. Power: 200W
Length 2.5m
Type: 2 x 5/8 wave (2m)
4 x 5/8 wave (70cm)
Connector: SO-239 socket

\$199

Cat. D-4830

2m/70cm GST-3

Frequency: 144-148MHz, 430-440MHz
Gain: 7.9dB on 2m, 11.7dB on 70cm
Max. Power: 200W
Length: 4.4m
Type: 3 x 5/8 wave (2m)
7 x 5/8 wave (70cm)
Connector: SO-239 socket

\$299

Cat. D-4835

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Sydney and Enquiries - (02) 937 3366

Fax: (02) 805 1986 or write to
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All major Credit Cards accepted. O/Nite Courier Available.
Yaesu stocks and some antennas not held at all stores, please contact your local store for availability, or phone 008 22 6610

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B 2048

WIA DXCC Standings

Here are the DXCC listings as at 1 July 1995.

Phone Honour Roll

Callsign	Countries
VK5MS	326/379
VK4KS	326/372
VK4LC	326/372
VK5WO	326/361
VK6HD	326/350
VK6LK	326/350
VK4RF	326/344
VK3QI	326/339
VK3AKK	326/337
VK2FGI	326/331
VK3DYL	326/331
VK6RU	325/379
VK5XN	325/345
VK4OH	325/331
VK5QW	325/329
VK4UA	324/337
VK1ZL	324/329
VK5EE	322/327
VK6NE	320/335
VK3YJ	317/322

VK3OT	315/327	VK2SG	253/274	VK7TS	170/171
General Listing		VK2AVZ	251/257	VK2BQS	162/165
VK7BC	314/323	VK4QO	251/255	VK4BAY	158/160
VK3AMK	313/329	VK3DP	245/248	VK2NO	157/
VK3CSR	312/320	VK2PU	244/247	VK4IT	153/154
VK6AJW	312/317	VK6YF	238/241	7J1AAL	149/150
VK4AAR	309/312	VK2CKW	234/237	VK4ARB	149/150
VK6VS	309/312	PS7AB	233/237	VK4DMP	147/148
VK6PY	307/312	VK3DS	226/336	VK3DNC	141/142
VK5WV	305/324	VK2ETM	226/227	VK6LC	139/140
VK3RF	304/311	VK4SJ	220/	VK2EQ	139/
VK2DEJ	304/309	VK5IE	219/221	VK4CHB	137/138
VK3WJ	303/308	VK5BO	218/222	VK2SPS	135/137
VK6RO	299/304	VK3UY	217/217	VK4VJ	135/137
VK3JI	298/312	VK6APW	216/217	VK6LG	135/135
VK2WU	292/296	VK3DD	214/217	TI2YLL	129/
VK4DP	289/300	VK4XJ	204/216	VK4IL	129/
VK2AKP	289/294	VK4CY	202/203	LU5EWO	125/
VK4BG	287/302	ON6DP	200/202	SM6PRX	122/126
VK2DTH	287/289	VK4KRP	199/201	VK3TI	122/125
VK2APK	285/313	VK2VFT	198/201	VK7WD	115/116
VK3CYL	283/290	VK4DDJ	198/198	VK3BRZ	114/116
VK3DU	282/290	VK3CIM	196/199	VK4NJQ	111/115
VK5OU	281/286	VK3DVT	196/198	VK4VIS	111/113
VK3VU	272/275	VK4AU	191/191	VK5GZ	108/110
VK4OD	272/275	VK6BQN	186/190	VK5AGM	105/107
VK3GI	264/267	VK4ICU	182/184	N4JED	104/105
VK3VQ	259/276	KA1TFU	176/179	VK3EHP	103/105
ZS6IR	259/262	VK4LV	174/176	VK4BJE	102/104
		WA1MKS	171/	JH3OHO	101/103

Communications

INCORPORATING AMATEUR RADIO ACTION AND CB ACTION

RADIO and COMMUNICATIONS has loads of material of specific interest to amateur radio operators. After all, we've all known **Amateur Radio Action** for almost 20 years, and **R&C** is the former **ARA** with **CBA** thrown in.

This month, our second great issue reviews...

- **Alinco DR-150E 2M mobile.** It's ready for 9600 baud and receives almost everywhere!
 - **PacComm 'Sprint' TNC.** This is the fastest amateur packet TNC around... and how!
 - **Pro-Am HF whip antennas.** These mobile antennas produce amazing signals...
- We also have reviews of scanners, counters, a discone antenna and more!

But a good, well-balanced radio mag is much more than just reviews! The former editor of *Ham Radio Today* continues his absorbing series of antenna theory and construction articles for us this month, and we consider making *Superior Dipoles* to suit your back yard. We also continue our in-depth look at computers in the shack, with communications software, Internet, Linux and more.

Of course, there's *lots* more there too, as you'd expect from a bulging 100 pages... and it's all yours for only \$3.95
Don't miss out — you could win one of our great prizes too!

Check your local newsagent today!

VK2CMV	100/102	VK4XJ	150/163	VK7BC	319/327	VK4ICU	212/214
VK6APH	100/101	VK6BHW	150/152	VK3OT	318/330	VK2VFT	202/205
VK4KGE	099/101	VK4UA	143/155	General Listing			
CW		VK4ICU	143/	VK3AMK	313/329	VK7TS	201/202
Honour Roll		VK5UO	142/143	VK3XB	311/340	VK3DNC	185/187
Callsign	Countries	EA6AAK	138/	VK3JI	311/339	VK5GZ	178/180
VK3QI	325/336	VK7DQ	137/138	VK6PY	309/316	VK2BQS	176/179
VK6HD	324/344	VK2SG	136/148	VK4AAR	309/312	VK6MK	170/172
		VK4KS	126/134	WA3HUP	306/330	VK2NO	158/
General Listing		VK7TS	125/	VK4DP	304/317	VK6NV	154/156
VK3XB	309/343	VK2TB	123/125	VK6RO	304/309	VK2CXC	150/152
VK4RF	306/332	VK4AAR	121/123	VK4BG	294/312	VK4CHB	145/147
VK5WO	300/315	VK3AGW	119/120	VK3DP	294/297	VK6LC	142/144
VK3KS	295/322	VK2AKP	115/117	VK2APK	292/328	VK2SPS	136/138
VK6RU	275/319	VK5BWW	110/111	VK2SG	289/314	VK4NJQ	133/139
VK2APK	274/304	VK5QJ	107/109	VK2AKP	289/294	VK4EZ	129/138
VK3JI	267/291	VK2FYM	106/108	VK4OD	285/288	YB8GH	127/129
VK3AKK	267/272	VK8KV	102/103	VK3CYL	283/290	VK7HV	114/117
VK7BC	230/239	VK2CXC	101/103	VK3VQ	274/291	VK5BWW	111/112
VK3DP	227/230	Open		VK3UQ	272/274	VE7BS	106/107
VK4LV	223/230	Honour Roll		VK5BO	264/301	VK3COR	102/104
VK4DA	221/223	Callsign	Countries	TF5BW	260/264	VK3VB	102/104
VK2CWS	210/212	VK4KS	326/372	VK4CY	256/257	SM7WF	101/
VK4DP	203/214	VK5WO	326/364	VK4LV	242/249	VK7DS	099/102
VK6PY	191/194	VK4RF	326/361	VK2ETM	239/240		
VK4OD	185/188	VK6HD	326/351	VK3CIM	236/239	RTTY	
VK3CIM	184/185	VK3QI	326/340	VK4XJ	233/249	Callsign	Countries
VK5GZ	166/168	VK3AKK	326/337	VK5UO	226/229	VK3EBP	198/200
VK6MK	165/167	VK6RU	326/328	VK6APW	223/224	VK2SG	157/160
VK5BO	159/184	VK5QW	325/329	VK4DA	222/224	VK2BQS	115/117
VK3DNC	154/157	VK4UA	324/339	WA5VGI	216/218		
VK4CY	154/	VK3JA	323/370	VK2CWS	214/216		

*PO Box 2175 Caulfield Junction 3161
ar

How's DX

Stephen Pall VK2PS*

The other day a direct QSL card arrived from an Australian Novice operator who was thrilled at having worked his first AX prefix on 80 metres.

Being the QSL manager for AX2ITU, I replied with our card, encouraging him to study and to pass the examination for the full call, suggesting to him that he will have plenty of good fun working DX on the other bands. To my surprise he replied, I quote below most of his letter. For obvious reasons his name, callsign, location and the name of the amateur radio club he is referring to, remain confidential.

He wrote, "Stephen, thanks so much for the AX QSL card and short note. Yes, I know I will have more fun with a full call. I have only been an amateur for two years and I have not been very active due to work. Anyway, about upgrading to a full call. To be honest I do not care anymore as I have lost my interest in radio due to the fact that here in (QTH) there is an old timers' group of amateurs and, because

I am a young bloke, I just don't fit in. I have been a WIA member since I got my licence and I must say that they have done a good job in getting Novice stations packet radio, but here there are full calls who are saying that in my day you had to be able to build your own station and packet radio should be for the smart people. Yes, I have heard this, Stephen. Even though I can do CW at 20+ wpm, my theory is not up to their standard so I am not a smart person. This is why this year in November when my licence runs out I do not think I will pay for the renewal and will sell all my gear.

You might think this is too much. Well, when you go to a club meeting and ask for help from the club in doing the upgrade theory, they forget you asked."

His letter ends here. Are you shocked? I was when I read the letter, and I am still shocked. Is this a true picture of the so-called "old timers"? Do old timers or clubs behave everywhere like those in that locality? Is snobbishness about certain

callsigns still part of our amateur life? You, the reader, should be the judge!

In the meantime I have written to my young friend suggesting a few good books which could be useful for his home study. I hope he changes his mind and will stay with the hobby.

Australia Remembers — VISOPEACE

The Hervey Bay Amateur Radio Club of Queensland is promoting the above award by activating the special event station VISOPEACE from 1 August until 31 October 1995.

The activity will commemorate the men, women and children who lost their lives due to the acts of aggression experienced during the war years. Activity will be across all bands from 160 to 2 metres, including the WARC bands and packet radio. Some preferred frequencies will be 1.820, 3.615, 7.058, 10.150, 14.215, 18.120, 21.195, 24.945, 28.580, 50.110 and 144.100 MHz SSB, plus all the usual CW frequencies, shifting off recognised call frequencies as and when required. Packet frequencies will be advertised on Bulletin Boards worldwide with correct addresses.

A very attractive QSL card and award certificate have been produced by the Club. The Award itself will cost \$US5.00, which includes airmail return postage. The direct QSL requires only a SASE or one IRC to QSL Manager, HBARC Inc, PO Box 829, QLD 4655, Australia.

Heard Island — VKO

For many months there have been rumours that two interested DX groups are in the process of organising a DXpedition to Heard Island, one of the most wanted DXCC countries.

Heard Island is a gale-swept volcanic island in the south of the Indian Ocean, lying at latitude 53° 10' S and longitude 73° 23' E. It is approximately 1500 km north of the Antarctic Circle and about midway between South Africa and Australia, at a distance of 4100 km south-west of Perth. It is about 27 miles long and 13 miles wide formed around a volcanic mountain mass named Big Ben, the highest point of which, Mount Mawson, rises to slightly more than 9000 feet. There are no secure anchorages around the coastline and all land above 1000 feet is perpetually covered with snow. The island became Australian Territory on 26 December 1947 when a permanent station was established there for scientific and meteorological research.

Heard Island was first sighted by the British sealer Peter Kemp, Master of the brig MAGNET, on 27 November 1833, but Kemp did not publish his discovery and the island takes its name from Captain Heard of the American ship ORIENTAL, who independently discovered the island in 1853 when on passage from Boston to Melbourne. When the research ship HMS CHALLENGER visited Heard Island for a short survey in 1874 they found about 40 sealers established there, but subsequently the number of seals declined and a German party in 1902 found the island to be deserted. A passing British ship reported in 1910 that Big Ben was in violent eruption. A South African company had sealing and mineral rights over Heard and nearby McDonald islands in the years between 1929 and 1934.

A British, Australian and New Zealand Antarctic Research Expedition under Sir Douglas Mawson visited the islands in the ship DISCOVERY in November 1929, but it was not until the arrival of the Australian National Antarctic Research Expedition (ANARE) in 1947 that a permanent scientific research station was established. This permanent station was discontinued in 1954, but a base camp was maintained as a staging point for expedition vessels en route to the Antarctic mainland.

Heard Island is visited regularly by

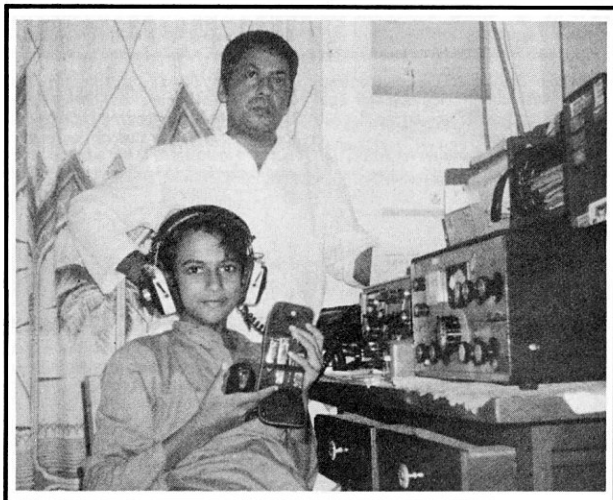
ANARE scientists, but these days with modern communication methods at their disposal, the humble amateur radio operator is not considered to be a necessity for such scientific undertaking. It was quite a different story in the "good old days". The first amateur activity from Heard Island came in 1947 when Allan Campbell-Drury signed VK3ACD/Heard. He was on the island for 15 months and returned to the island for the two following years with ANARE. It was also reported that in the years of 1948-50 Michael Vause was signing as VK1HV/Heard. According to CQ Magazine, N T Lied used the VK0NL callsign in 1963. Bob Allison was also reported in the same year using the callsign VK1RA. Don Miller W9WNV "used" the call VK2ADY/VK0 in 1966. In 1969 Bill Rohrer W7ZFV was heard with the callsign VK0WR when the USCG SOUTHWIND stopped to unload some scientific equipment. Hugh Milburn WA6EAM signed VK0HM in 1976 when he was on Heard Island in connection with a group making celestial observations for the National Mapping Authority.

There is also a suggestion that a year later a French group visited the island and F2JD was reported to be active using the VK0HM callsign. The national mapping group apparently visited Heard Island several times. In 1980 the ship CAPE PILLAR took some members of the mapping group to the island. The call VK0RM was used by the radio officer of the ship. He made only a limited number of contacts before his equipment failed.

There was no reported amateur radio activity between the years of 1980-1983. 1983 saw the start of the properly organised combined scientific-amateur DXpeditions to the island. To the delight of the "deserving", not one, but two independently organised DX groups visited the island in January-February 1983. The West Australian VK6 DX Chasers Club combined with a mountaineering group on the island from 21 January to 21 February 1983 and made 30,000 contacts under the callsigns VK0HI and VK0CW. The operators were Dave Shaw VK3DHF and Al Fisher K8CW.

Jim Smith VK9NS was the leader of the other group, HIDXA, which visited the island more or less at the same time as the VK6 DX Chasers Club expedition. HIDXA, The Heard Island DX Association was formed in 1980 with the sole objective of activating this rare DXCC country. The HIDXA group of five amateurs and 13 scientists landed on the island on 5 February. The operators were VK9NS, VK9NL, VK0SJ, WA8MOA and OE1LO, using the callsign VK0JS, and made 14,000 plus contacts with 138 countries. The adventurous and very often dangerous sea voyage in the old whaling ship CHEYNES II to Heard Island and back to Albany, WA is a separate story in itself.

No radio amateur activity was then noticed from Heard Island until late 1986, early 1987, when Frank VK0DA spent two months on the island as a member of the ANARE Team.



Rachid 3B8FQ in his shack in Mauritius.

This brings us up to the latest proposed DXpedition. A group from the Peter Island 3Y0PI team intends to visit Heard Island in November this year. Permission to land has been obtained from the Australian Antarctic Division. All environmental assessments and letters of indemnification have been filed and approved. Separate scientific work during the stay of the expedition has been planned and is expected to be approved. A 140 ft vessel has been chartered for the trip. The team will sail from Fremantle, WA on 1 November and is expected to land on 12 November.

Intended return to Fremantle is to commence on 1 December, arriving there on 12 December 1995.

Activity on all bands and all modes, including digital and satellite, is promised. The group of intending operators includes K0IR, K6EK, ON6TI, HB9AHL, N6EK, PA3DUU, K5VT, DJ9ZB and JH4RHF. Donations to defray the high cost of transportation should be forwarded to K0IR, Heard Island DXpedition, PO Box 563, Waite Park, MN 56387-0563 USA.

Huang Yan Dao — BS7H

The Scarborough Reef DXpedition made a total of 11,832 QSOs out of which 5,539 were made with Japan, 238 QSOs with the US and 3,955 QSOs with the rest of the world. The expedition produced a colour QSL card which shows a sizeable rock above the watermark accommodating six operators and their equipment, with an operating desk, umbrellas for shelter and a vertical antenna.

The latest news is that a new expedition is being prepared to go to Scarborough Reef. Wayne N7NG advises that a licence, with a new callsign BS7A, has been obtained from the Peoples' Republic of China authorities, and an international team of operators including N7NG, OH1RY, SM7PKK and JH4RHF, is now being assembled. The operation is expected to last six days including a full weekend. The expedition will be supported by the Philippines IARU Society (PARA) and the CRSA, the Chinese IARU society. The operation will include the low bands and RTTY, and a beam antenna will be used for the first time.

Tung Sha Dao — BV9P

The Pratas Island DXpedition closed the station around 2300 UTC on 4 June. The predicted typhoon fortunately avoided Pratas. The DX group achieved a total of 25,000 QSOs. 4,000 contacts were made with the US, 6,500 with Europe and nearly 13,000 with Japan and the local area. Some contacts were made on

80 and 40 metres but the primary objective was to get as many different callsigns in the logs as possible.

North Korea — P5

Tim KJ4VH reported that full documentation of the recent P5/OH2AM activity has been submitted to the ARRL DXCC desk for approval and the addition of North Korea to the DXCC countries list is expected soon. North Korea is the last of the United Nations member countries to be added to this list.

There is further good news about North Korea. Two members of the recent P5 activity, OH0XX and OH2BH, have received an invitation already for a full scale amateur radio activity. The respective callsigns will be P51XX and P51BH. This operation is expected to take part later on this year.

Future DX Activity

- The new Baghdad Radio Club is now on the air with the callsign Y1HRS. QSL to Box 55072, Baghdad, Iraq.
- The DXpedition to Easter Island will be from 2 to 23 September with the callsign XR0Y.
- Pres N6SS will be at Diego Garcia for a four month stay. He will use the callsign VQ9SS. QSL to home call via the W6 QSL Bureau.
- In September there will be activity from Juan Fernandez island. Bob K4UEE and Randy K0EU will be on the island from 13 September for seven days.
- The South Sandwich Island DX Group led by Tony WA4JQS is also preparing an activity from Heard Island early in 1996.
- Wake Island KH9 will be active in the northern autumn 1995. A group of US amateurs plans to be active for one week.
- Selim OE6EEG will be in Tunisia and will operate the Club station 3V8BB from 3 to 17 August.
- Dominik DL5EBE will be active from Svalbard Island as JW0K. QSL to his home call.
- Jose T12JP is planning a new activity from Cocos Island (Pacific) in October.
- Eric 5T5JC will be active until 25 August as 5T6E on all bands and modes. QSL to F6FNU.
- The activity from Salas y Gomez island will take place from 1 to 22 October. The expedition will be led by Carlos NP4IW and will sign as XR0Z. SyG will count as Easter Island CE0 for DXCC purposes but it will become a new IOTA reference number.
- Vally D2/YO3YX is with the Romanian Army Contingent in Angola until the end of the year, attached to the United Nations Medical Corps. QSL via

YO3YE, Box 55-36, Bucharest, Romania.

- NH6YK will be active from Belau with the callsign KC6YK until 25 August.

Interesting QSOs and QSL Information

E = East coast; W = West coast; M = Rest of Australia.

- 9J2BO — Brian — 14195 — SSB — 0618 — June (E). QSL to W60RD Norm Friedman, PO Box 19055, Encino, CA 91416-9055, USA.
 - VP2VF — Dirk — 14226 — SSB — 1252 — June (E). QSL to Dirk de Jong VP2VF, PO Box 137, Road Town, Tortola, British Virgin Islands, West Indies.
 - V44KBP — Terry — 16121 — SSB — 0422 — May (E). QSL to PO Box 827, St Kitts, West Indies.
 - YMOKK — 14260 — SSB — 0705 — May (E). QSL to Box 93, 81031 Istanbul, Turkey.
 - H4V4NAC — Francesco — 14195 — SSB — 0617 — May (E). QSL to IK0FVC, Francesco Valsecchi, via Bitossi 21, I-00136 Roma, Italy.
 - 5N9ABY — 14164 — SSB — 0528 — June (E). QSL to Alhaji Y Abu Bakar, PO Box 1915, Sokoto, Nigeria.
 - IPOJN — Joe — 14263 — SSB — 0411 — June (E). QSL via IK0DYD, Francesco Benenati, Via Acquaviva 85, I-81100, Caserta, Italy.
 - T30EG — Bry — 7083 — SSB — 0655 — June (E). QSL to KH6JEB, Richard Senones, 95-161 Kauopae Place, Mililani Town, Hawaii, 96789, USA.
 - 7P8SR — Ray — 14164 — SSB — 0540 — June (E). QSL to Ray Shankweiler, PO Box 333, Maseru 100, Lesotho, Africa.
 - T20XC — Masa — 10.107 — CW — 0637 — June (E). QSL to JE1DXC, Masayoshi Mihara, 4-22-23, Honda, Urawa, Saitama 336, Japan.
 - C21DJ — Darkey — 14160 — SSB — 0435 — June (E). QSL to PO Box 217, Republic of Nauru.
 - 4H1TR — 14260 — SSB — 0608 — June (E). QSL to I2CBM, Umberto Cambieri, Via Bucella 32 6, I-27029 Vigevano, Italy.
- ## From Here There and Everywhere
- The British Virgin Island (VP2V) QSL Bureau is run by Dirk de Jong (see address above). He will accept cards for VP2V stations only.
 - DU97RG, a special event station, celebrated the 97th anniversary of the independence of the Philippines on 12 June.
 - T30EG, Bry, is a maths/science teacher seconded to a Kiribati high school by the American Peace Corps

administration. As he is 18 km from the nearest town, and he has only three hours of power a day, his rig is dependent on a battery/solar power combination. He will stay on Kiribati for a further one and half years. So far he has made 1,000 QSOs.

- Ron ZL1AMO was on Tokelau Island activating the callsign ZK3RW. He arrived on 21 June and had to wait many weeks for the returning boat which took him off the island.
- The RSBG has appointed Chris Page G4BUE as the new editor of *DX News Sheet* (DXNS). Chris promises a fast turn around of news and, as a result, he has reduced the newsletter size to four A5 pages. He also announced that other DX information will be published in a new DX Magazine which will appear each month and will contain 16 A5 pages.
- If you need Mauritius, look out for Rachid 3B8FQ who is QRV on the "old bands" in CW at around 1400 UTC on 20 metres. His preferred frequencies are 7008, 14008, 21008 and 28008 kHz. Rachid is running 100 watts into a TH3JR and also a long wire antenna. His daughters will be soon on the air with the callsigns 3B8AA and 3B8AH.
- The following stations have been reported by various DX Newsletters as being pirate operations: A73CW (K7CW is not the QSL manager), 3A5OA and 3A2CC.
- Canadian stations will use XK, XJ, XO and XN prefixes between 8 July and 8 September to mark the 50th Anniversary of the end of World War II.
- 9N1ARB is an American in Nepal working for the UN and will stay there about five more years. The Nepalese amateurs want to establish a club station with the call 9N1MM in memory of the late Father Moran.
- There are some unconfirmed reports that the YVORCV cards are starting to arrive in the mail.
- VU2JPS on Andaman Island can be heard in list operations on 14205 kHz at 1750 UTC. It is rumoured that VU2RKC and other VU radio amateurs are planning a trip to the Andamans in October this year.
- There is news that the Kergulen station FT5XJ will be active until 15 December, and again from January to March 1996.
- The price of IRCs in the USA post offices has increased by 10 cents to \$US1.05 and the redemption value increased to \$US0.60 cents. At the same time international postage rates in the US have increased to \$US0.60 to overseas countries.
- TA2ZW is Zdenko OK2ZW who will be in Turkey for the next three years. QSL

to the OK DX Foundation, PO Box 73, 293 06 Bradlec, Czech Republic.

- The new address of IOTA expeditioner Bernhard Stefan DL2GAC is Moeggenweiler Str 18, 88677-Markdorf, Germany.
- 7Z50Q, Mike, will be active from Saudi Arabia for another year until June 1996. QSL to W1AF.
- The Beijing International DX Convention will happen between 13 and 16 October 1995. Presentations on the Pratas and Scarborough Reef DXpeditions are on the agenda. The convention will be held at the China Resources Hotel. The registration cost is \$US300 which includes lodging and meals, tour admissions and local transportation.
- Seborga again. The ITU has reported that the T8 callsign block has not been issued to Seborga or to anyone else. As Seborga is not a member of the ITU yet, its application has to be supported by a country which has full membership of the international organisation. Due to administrative reasons, this move apparently takes longer than anticipated. All the T88 activity has now been suspended from the Principality. Back to square one.

- Tim 4U/KC0PA is active from Western Sahara. QSL to VE9RHS.
- Do you remember Frank or "Zig" VK2EKY? In 1990 Frank was very active in the Pacific region as ZK2EKY, ZK3EKY, 5W1KY, A35KY, KH8/VK2EKY, KH2/VK2EKY and as 7J1AGD/6. Frank now lives in Japan and is active on 20 metres around 14245 kHz at about 0600 UTC as 7J6AAK/2. He sends his greetings to all his friends in Australia.

QSLs Received

ST2AA (2 w WB2RAJ) — N2PQE/KH (4 w JE2HCJ) — ZS6P (4 m Op) — KG4ZE (5 w K4SXT) — 5U7Y (6 w JG3UPM) — RX10X/FJL (2 m DL6YET).

Thank You

Many thanks to my friends and supporters who supply me with news and information. Special thanks to VK2CJH, VK4AAR, VK4BX, VK4CY, VK4MZ, VK4OH, 7J6AAK/2, HBARC Inc, The Australian Encyclopedia, CQ Magazine, and the following publications *QRZ DX*, *The DX Bulletin*, *The DX News Sheet*, *Index* and *GOLIST QSL Managers List*.

*PO Box 93, Dural NSW 2158
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Contests

Peter Nesbit VK3APN — Federal Contest Coordinator*

Contest Calendar Aug — Oct 95

Aug 5/6	YO DX Contest	(Jul 94)
Aug 12/13	Remembrance Day Contest	(Jul 95)
Aug 12/13	Worked All Europe CW	(Jul 95)
Aug 12/13	SARTG RTTY Contest	
Aug 19/20	SEANet SSB DX Contest	(Jul 95)
Aug 19/20	Keyman's Club of Japan (CW)	(Jul 95)
Sep 2/3	All Asia DX Contest Phone	(May 95)
Sep 3	Bulgarian DX Contest	
Sep 3	Panama Anniversary Contest	
Sep 9/10	Worked All Europe Phone	(Jul 95)
Sep 16/17	SAC DX CW	
Sep 23/24	SAC DX Phone	
Sep 23/24	CQ WW RTTY DX Contest	
Oct 1	RSGB 21/28 MHz Contest Phone	
Oct 7/8	VK/ZL/Oceania DX Contest Phone	
Oct 14/15	VK/ZL/Oceania DX Contest CW	
Oct 15	RSGB 21/28 MHz Contest CW	
Oct 21/22	Worked All Germany Contest Mixed	
Oct 28/29	CQ WW DX Contest Phone	

New VK/ZL Trophy

This month's column contains the rules for the 1995 VK/ZL/Oceania DX Contest. They are the same as last year, except that the highest scoring CW station will now be awarded the Frank Hine VK2QL

Memorial Cup, and receive a wall plaque, thanks to the generous support of Ms Susan Hine, daughter of the late VK2QL. Frank was a keen contesteer and superb operator, and it is fitting to see him remembered in this way. Many thanks are extended to Ms Hine for her gesture.

Kiwis beat Aussies?!

The CW leg of the combined Australian sprints took place last weekend, and all I can say is that you VKs are such an unadventurous lot! Those who took the plunge and operated in more than one contest, were rewarded with a good number of QSOs, several interesting hours, and a feeling of real achievement by the end. Unfortunately, with VK activity at its usual low ebb, one had to rely on working ZLs for the majority of contacts. Thankfully, the ZLs showed none of the characteristic Aussie reticence when it came to getting on air and "having a go"!

Admittedly, the ZLs were on mainly for their own Memorial Contest, but where were the VKs for their own VK contests? I found it ironic, even amusing, that last night's lead story on "60 Minutes" was that, despite our superior reserves of land, people, and natural resources, the Kiwis are beating the pants off us on several fronts, including economic success and community confidence. Following last weekend's effort, one should probably add contests to the list as well (and that is despite all my haranguing over the last few years, about the need for more VK activity)!

As contesters, how many times are we asked "please QSY to another band for another QSO, because you are my only VK in this contest"? As I've said before, there are many superb contesters in Australia; however, we need to be more active and adventurous if we are to catch up with the rest of the world. Hopefully, by this time next year, a few more of you might realise that it can be just as much fun (or even more so) to enter a local event as a DX one, even if you're not working countries ten to the dozen. There is a saying "charity begins at home", and I believe the same applies to contesting. So, see you in next year's sprints (and if I don't hear you on, I'll be around personally to chop your antenna down)!

Remembrance Day Contest Survey

Over the last couple of years a number of letters have been received inquiring about the possibility of reinstating the old HF points table, in lieu of the current fixed points per QSO. For those who may be unfamiliar with the table, this was a system used for many years prior to 1981, wherein points were awarded on a scale of 1 to 6, according to the degree of difficulty of the QSO. For example, whereas QSOs between adjacent states were worth minimal points, those with VK0 attracted six points. Other QSOs attracted intermediate points. The objective was to encourage entrants to search for distant

stations, and also to exercise their skill at balancing the relatively easy cross-border QSOs with the weaker, but more valuable, long-distance ones.

The downside was that logs took a bit longer to prepare, and scoring errors were somewhat more likely to occur. A modern objection would be the inability of most contest logging software to cope with such a table, making it necessary to enter the points by hand (or better still, by macro).

However, as part of the ongoing effort to improve the RD Contest, it is fair to ask whether the existing fixed points per QSO should be retained, or should the points table system be reinstated, or should another scoring system altogether be tried?

Because this is the sort of decision best made by entrants themselves, YOU are invited to nominate your preferred scoring system for next year's contest, when submitting your log for this year's contest. Note that this nomination is entirely voluntary, and will not affect the scoring system used this year, which was described in the rules last month. Your vote on this issue, and any other applicable comments you wish to make, will be greatly appreciated.

Many thanks this month to VK1PJ, DL2DN, LA4YW, CQ, QST, and Radio Communications. Until next month, good contesting!

73,

Peter VK3APN

Addendum to Results of 1993 CQ-WPX CW Contest

Due to an apparent error in the information supplied to the WIA, the CW winner for VK5 was shown in the May column as "VK5AGS", whereas it should have been VK5AGX. Please amend your issue accordingly.

SARTG RTTY Contest

12/13 August, 0000-0800z & 1600-2400z Sat, 0800-1600z Sun.

This is the 25th annual contest sponsored by the Scandinavian Amateur Radio Teleprinter Group. Use 80-10 m; classes are single operator, single and multiband; multiplier single Tx; SWL. Exchange RST and QSO number. Claim five points for QSOs with own country, 10 points for other countries on the same WAC continent, and 15 points for other WAC continents. Multiplier is total DXCC countries plus each call area in USA, VE/VO, and VK. Final score equals total QSO points (all bands) times total multiplier (all bands). Use a separate log for each band. Send logs and summary sheets to be received by 9 Oct to SARTG Contest Manager, Bo Ohlsson SM4CMG,

Skulsta 1258, S-710 41 Fellingsbro, Sweden.

Bulgarian DX CW Contest

3 September, 0000-2400z Sun.

This contest runs on the first Sunday of September each year on 80-10 m, CW only. Exchange RST plus ITU zone (P2 = 51, VK4/8 = 55, VK6 = 58, VK12/3/5/7 = 59). Score six points for each QSO with an LZ, three points for each QSO outside your WAC continent with a non-LZ, and one point for each QSO within your WAC continent. SWLs score three points if both exchange numbers are copied, and one point if only one exchange number is copied. Multiplier equals the total ITU zones worked on each band. The final score equals the total QSO points (all bands) times the total multiplier (all bands). Send logs postmarked within 30 days (3 Oct) to Central Radio Club, Box 830, 1000 Sofia, Bulgaria.

Panama Anniversary Contest (SSB)

3 September, 0000-2359z Sun.

The Panama Radio Club invites all radio amateurs to participate in their 24th annual contest. The only category is single operator all band SSB. Exchange RS plus serial number. Score two points for QSOs with HP club members, and one for others. The multiplier is the total DXCC countries worked on all bands. Certificates of participation will be sent to all amateurs working 10 or more HP stations, upon receipt of three IRLs, and a plaque to the highest scoring station in each continent. Send log postmarked by 30 November to Radio Club Panama Contest, Box 10745, Panama 4, Panama.

35th Scandinavian Activity Contest

16/17 September (CW), 23/24 September (Phone); 1500z Sat — 1800z Sun.

The CW and phone sections of this contest run on the third and fourth full weekends of September respectively, each year. The object is for amateurs worldwide to contact as many stations in Scandinavia as possible, on 80-10 m (no WARC bands). Scandinavian prefixes are LA/LB/LG (Norway); JW; JX; OF/OG/OH/OI (Finland); OF0/OG0/OH0 (Aaland Is); OJ0 (Market Reef); OX; OY; OZ; SI/SJ/SK/SL/SM/TS/8S (Sweden); and TF.

Categories (all band only) are single operator; single operator QRP (max 10 W I/P); multiplier single transmitter; and SWL. Exchange RST plus serial number starting at 001. For each QSO, score one point on 20, 15 and 10 m, and three points

on 40 and 80 m. The multiplier is the number of call areas (0-9), not prefixes, for each Scandinavian country worked on each band. Portable stations without a district number count as area 0, eg G3XYZ/LA counts as LA0. OH0 and OJ0 are separate call areas. The final score is total QSO points (all bands) times total multiplier (all bands).

Use standard format for logs and summary sheets. Show duplicate QSOs with 0 points. Dupe sheets are required for 200+ QSOs. Forward separate logs for CW and phone sections. Logs on DOS disk in lieu of paper are preferred, if possible. Disk logs must be in ASCII, one QSO per row, and labelled with the call, contest name, sections, and contest date. Include an SASE if you want your disk returned. Summary sheet must be on paper. The mailing address alternates between EDR (Denmark), SRAL (Finland), SSA (Sweden), and NRRL (Norway) in that order. For 1995, send logs postmarked by 31 Oct to SRAL HF Contest Manager, M Tojala OH2BQZ, Kiskontie 26A, SF-00280 Helsinki, Finland. Comprehensive awards to top scoring stations.

CQ WW RTTY DX Contest

23/24 September, 0000z Sat — 2400z Sun.

In this contest the object is to contact as many stations worldwide as possible using digital modes (Baudot, ASCII, AMTOR (FEC & ARQ), packet on 80-10 m (no unattended operation or operation through gateways or digipeaters), etc. Note new rule! All stations may now operate for the full 48 hours.

Categories are single operator unassisted, single and multiband; single operator assisted, all band; multioperator single Tx, all band ("10 minute" rule applies to this category EXCEPT that one — and only one — other band may be used during the 10 minute period, if — and only if — the station worked is a new multiplier); multioperator multi Tx, all band. Single operator entrants can enter the low power section (up to 150 W) or high power (more than 150 W).

Stations may be contacted only once per band, regardless of the mode used. Send RST plus CQ zone; W/V/E will send RST, state or area, and CQ zone. Count one point for each QSO with stations in your own country, two points for each QSO outside your country but inside the same WAC continent, and three points for each QSO with stations outside your continent. On each band, the multiplier equals the sum of US states (max 48) and Canadian areas (max 13) PLUS DXCC countries (including W and VE) PLUS CQ zones (max 40). Note: KL7 and KH6 are

claimable as country multipliers only, not state multipliers. Canadian areas are VO1, VO2, VE1 (NB), VE1 (NS), VE1 (PEI), VE2, VE3, VE4, VE5, VE6, VE7, VE8, and VY. The final score equals total QSO points times total multiplier from all bands.

Submit a single summary sheet including scoring calculations for all bands, plus for each band a separate log, duplicate check list, and multiplier check sheet. Send logs postmarked by 1 December to Roy Gould KT1N, CQ WW RTTY Contest Director, Box DX, Stow, MA 01775, USA. (Box "DX" is not a misprint!) A comprehensive range of plaques and certificates is offered.

Results of 1994 WAE DX Contest

VK5GN was continental winner on phone, and VK2APK on CW.

(callsign/score/QSOs/OTCs/mult):

CW:

VK2APK*	180320	490	490	184
VK3APN	264	11	0	24
VK4TT	168	12	0	14

Phone:

VK5GN*	39864	163	139	132
VK2APK	30456	141	141	108

Results of 1995 John Moyle Field Day Contest

Presented by Phil, VK1PJ

I am pleased to report that the President's Trophy, awarded to the portable single operator with the highest CW score, this year goes to Laurie VK4BLE. Well done Laurie!

I did not get the chance this time around to see what people ate and drank whilst roughing it (roughing it; that's a joke!). I believe that some even took the TV so that they would not miss their favourite shows. And what was that "brown stuff" they had in the fridge? Crikey, some people have it easy these days! However, I must admit doing the same when organising VK1WI. We even took champagne, cheeses, nibbles and a telescope, so that at 2 am we could have a party while trying some EME (EHE?) on Halley's Comet. Not one response though; there must have been a fault in the handheld!

I note from the comments that at least someone in VK4 had good weather this year. Also, VK4WIP had their share of Murphyitis, including trouble with an EFTPOS breaking down, the Fairlane almost blowing its poofer valve, sorehead-Pete (who was that man) sleeping in, and one poor soul trying to sleep without a sleeping bag (it's freezing where they went). At least the weather held off until after the contest. Another station, VK4WIT, must be the best organised ever

with their specially prepared folder, operating hints, and operation orders.

This year I received comments only from VK4. Next year I would like to see comments from others as well, but be careful; you never know what incriminating stuff I might use!

Logs were noticeably neater this year. Thanks also for the entries sent on floppy disk, which made them very easy to check using my log checking program. If you are considering a disk next year, I will only need the cover sheet and disk.

Many thanks to Barbara V85BJ for her log. Pity there aren't more logs submitted by DX stations. I would also like to thank the following home stations whose participation in the contest was much appreciated by the portable operators: VK1FF, VK1PJ, VK1PK, VK2APK, VK2RJ, VK3ALD, VK3KS, VK3VQ, VK3WB, VK3XB, VK4AJH, VK4BTS, VK4KMA, VK4PJ, VK6BK, VK6CSW, V85BJ.

Stations with a "*" next to their score have been awarded certificates for their efforts in their section.

6 Hour Results:

Multioperator, All Mode, HF:

VK4WIN	206*
VK2HZ	190

Multioperator, CW, HF:

VK4CHB	50*
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Multioperator, Phone, All Band:

VK2FRE	726*
VK3APW	580*

VK4YH	256*
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VK8DA	40
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Multioperator, Phone, HF:

VK7SHV	54*
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Single Operator, CW, HF:

VK4BLE	102* Trophy
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Single Operator, Phone, All Band:

VK4OE	884*
VK5DLJ3	224

Single Operator, Phone, HF:

VK5SK	132*
VK5UE	10

Single Operator, Phone, VHF:

VK2ANK	544*
VK4IS	212*

VK5AV	58
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24 Hour Results:

Multioperator, All Mode, All Band:

VK4WIS	2356*
VK6ANC	2208*

VK4WIP	1005*
VK3BTX	794

VK3DXH	330
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Multioperator, All Mode, HF:

VK2CW	534*
VK4WIT	190

Multioperator, Phone, All Band:

VK3ER	3878*
VK3APC	2838*

VK2WBP 2688*
VK3SAA 2668
VK5GRC 1098
VK2WG 344
VK2CD 151

Multioperator, Phone, HF:
VI4RC 1860*

Multioperator, Phone, VHF:
VK4WIE 3898*
VK3SCE 119

Single Operator, Phone, All Band:
VK6UA 330*

Single Operator, Phone, HF:
VK5ANB 348*
VK4EV 100

Single Operator, Phone, VHF:
VK5BW 5162*
VK3XBA 926

1995 VK/ZL/Oceania DX Contest

Date: This contest takes place each year on the first and second full weekends of October (Phone and CW sections respectively). For 1995, these dates are:

Phone: 7/8 October 1995, 1000 UTC Saturday to 1000 UTC Sunday

CW: 14/15 October 1995, 1000 UTC Saturday to 1000 UTC Sunday

Object: The object is for stations throughout the world to contact as many stations as possible in VK, ZL and Oceania (WAC boundaries apply), on 1.8-30 MHz (no WARC bands). Contacts between different countries in Oceania are permitted on all bands (eg VK to ZL, ZL to 5W, VK4 to VK9), but contacts within the same country in Oceania are permitted on 160 m and 80 m only (eg VK5 to VK6, ZL4 to ZL4, 3D2 to 3D2).

Categories: Single operator all band; single operator single band; multi-operator all band; and SWL. Single operator stations are where one person performs all operating, logging, and spotting functions. The use of DX spotting nets will place the station in the multi-operator category.

Exchange: RS(T) plus a three or four digit number starting at 001 and incrementing by one for each contact.

Multiplier: On each band this is the number of prefixes worked on that band. A "prefix" is the letter/numeral combination forming either the first part of the callsign, or else the normal country identifier for stations using their home callsign in another DXCC country. For example W8, AG8, HG7, HG73 are all separate prefixes. The prefix for both N8ABC/KH9 and KH9/N8ABC is KH9. Portable designators without numbers are assumed to have zero after the letter prefix, eg N8ABC/PA becomes N8ABC/PA. Any calls without numbers

are assumed to have a zero after the first two letters, eg RAEM becomes RAEM. Suffixes indicating maritime mobile, mobile, portable, alternate location, and licence class do not count as prefixes (eg /MM, /M, /P, /A, /E).

Scoring: For each contact score 20 points on 160 m; 10 points on 80 m; five points on 40 m; one point on 20 m; two points on 15 m; and three points on 10 m. The final score will be the total QSO points multiplied by the total number of prefixes worked. The same prefix can be claimed on different bands.

Logs: Use a separate log for each band, with times in UTC. Show new prefix multipliers the first time they are worked. Logs should be checked for duplicates, correct points, and prefix multipliers. Logs must be accompanied by a sorted list of prefix multipliers, and a summary sheet showing callsign, name, address, category, number of valid QSOs, points and multipliers on each band, claimed score, and a signed declaration that contest rules and radio regulations were observed. Logs on DOS disk in ASCII format are welcomed, although the summary sheet must be on paper. Comments on the contest and interesting anecdotes are invited.

SWL Logs: SWL logs should show date/time, the callsign of the station

heard, the callsign of the station being worked, RS(T) and serial number sent by the heard station, points claimed, and new multipliers.

Log Submission: Send logs postmarked by 17 November 1995 (Phone) or 24 November 1995 (CW) to the manager for the 1995 event, Peter Nesbit VK3APN, Federal Contest Coordinator, Wireless Institute of Australia, PO Box 2175, Caulfield Junction, Victoria 3161, AUSTRALIA. Overseas entrants please use airmail. Indicate Phone or CW on the envelope.

Awards: Special certificates will be awarded to the top scorers on Phone and CW in each continent, country, and VK, ZL, and JA call area. Where returns justify, second place, third place, and single band awards may also be made.

New Award: The CW entrant with the highest score will be awarded the Frank Hine VK2QL Memorial Cup, and receive an inscribed wall plaque in permanent recognition of their achievement.

Disqualification: Entrants may be disqualified for taking credit for excessive duplicates, unconfirmed QSOs or other scoring discrepancies, or unsporting conduct. In matters of dispute, the Contest Manager's decision will be final.

*PO Box 2175, Caulfield Junction, VIC 3175
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Divisional Notes

Forward Bias — VK1 Divisional Notes

Peter Parker VK1PK

Ginini Theft

A few days before June's *Amateur Radio* hit the streets, two juveniles and an adult male were apprehended in connection with the theft of the Mt Ginini amateur and CB repeaters. Many thanks to those who have sent donations, especially from interstate. VK1WI will keep you up to date with the latest developments in this area.

RD Contest

This month brings the annual Remembrance Day Contest. Last year's effort by VK1 was virtually non-existent, despite the current contest rules, which work in our favour. See February's *Amateur Radio*, page 30, to gain an idea of how miserable our participation really was — only ten people bothered to put in their logs. Being a small Division in a densely populated portion of the country, together with the low solar activity (which

makes contacts harder for the outlying states), VK1 should do better than any other Division. Instead, we did worse than any state, and would have received the wooden spoon award if it wasn't for VK8. VK8s, however, sometimes find it hard to get through to other states on HF, and VHF activity there wouldn't be much better. VK1s can make no such excuses, with most bands being open for cross-border communication for at least part of the contest period.

Make sure you set aside at least part of the weekend of the 12th and 13th of this month for your involvement in Australia's most popular contest. The rules appeared on page 30 of last month's issue of *Amateur Radio*.

Conversion Night This Month

August brings the long-awaited conversion night. This evening is for those members who bought transceivers capable of being converted to six or two metres from the Division. The session will be run at the August Divisional Meeting on the 28th. Paul VK1BX and Rob VK1KRM will be running this event.

Beacons Stay in VK2

You would have read in May's *Forward Bias* that the VK1 Beacons were being moved to VK1. There has since been a change of thinking on this matter, and the beacons will be remaining at their current site, just outside the ACT. By the time you read this, the beacons may have resumed operation, this time under a VK2 callsign. The present site has served VHF/UHF operators well, and is far away enough from Canberra so as not to interfere with weak-signal work.

QSL Cards to be Claimed

The VK1 incoming QSL bureau currently has on hand a large number of unclaimed cards for VK1 callsigns dating back to the early 1980s. The bureau is in the process of "cleaning house" and requests anyone who wants to claim their cards to get in touch with Jim VK1FF, the Division's QSL Manager. You can write to Jim care of the Division's address (GPO Box 600, Canberra, 2601), or via packet at VK1FF @ VK1KCM. Unless special arrangements are made, the bureau will now only hold unclaimed cards for a few months before returning them to their senders.

VK2 Notes

Richard Murnane VK2SKY

AGM and Council Election

What a difference a year makes! As you will have heard on the Divisional news bulletin, the Council elections and the Annual General Meeting went ahead without a hitch, and there has been no objection from any quarter about irregularities in the conduct of the ballot.

The results of the ballot were (* indicates those elected) Corbin, 708* votes; Fossey, 697*; Jensen, 708*; Kelly, 232; Kloppenberg, 694*; Liolio, 664*; McGrawery-Clark, 359; Miranda, 574*; Perry, 232; Rosser, 662*; Van de Weyer, 698*; and Westerman, 594*. Total formal votes were 758, plus 15 informal votes, making a total of 773. This represents 56.71% of the membership, an increase on last year.

Where to now? The following statement, which was read at the AGM, sums it up:

Short Term Objectives and Strategy for the NSW Division 1995.

Introduction

The last twelve months have offered little scope for innovative thinking and action in New South Wales. This situation has been very much dictated by the lack of legal status of the Division and ongoing problems of a political nature. However,

with the installation of a new and legally sound Divisional Council, it will be essential to change from what has been, in essence, a defensive position to an aggressively pro-active innovative stance. The position of *Radio Amateurs* is clearly under challenge and no more obvious is this than in the application of a form of Spectrum Tax to our activity.

It is now appropriate to put behind us the problems and personality clashes that have marked the recent activities of the Division and set up a comprehensive mechanism for change so as to meet the challenges of the near future. As an immediate goal for the Division, apart from cementing into place the stable working environment that has now been attained in its operations, there is an urgent need for closer liaison with the members at large and more particularly with the Metropolitan and Country Clubs. The weekly broadcast has gone some way to achieving such a goal but much more remains to be done.

Short Term Objectives

In the short term it is proposed that a limited range of objectives be established as a basis for a far more detailed analysis of the needs of the membership. It is anticipated that, in the longer term, it is essential the Division undertake the preparation of a proper strategic plan to respond to what is seen as requiring attention.

Particular short term objectives might include the following:—

- Consolidate and stabilise the Council organisation and institute a system of special purpose committees to undertake the main business of the Institute.
- Establish a budget on the basis that within not more than two years the Institute return to a balanced arrangement in which outgoings are matched by income and reserves are no longer required to provide income.
- The Policy and Strategy Committee commence a program of research and survey designed to establish the needs of the members and the most appropriate directions to be taking in the future.
- The Council organise a series of regional seminars designed to assist the Council to obtain feedback and support from the Country members and Clubs.
- Apart from the existing Committee responsibilities of the Institute, immediate activities requiring Committee support could involve public relations and recruitment; licensing and the SMA liaison function; expansion of the method of broadcasting of information to include

both packet, fax and, in the longer term, television; development of education and technical resources including liaison with educational institutions; projects and kit development; and comparable and related technology (computers).

The theme of these Institute operations may well be expressed in the words *"Amateur Radio is Worth Fighting For"*.

Your Council actively seeks your input and assistance in achieving these goals. We have closed the door on the mistakes and ill feeling of the past. Now it's time to move forward.

Thought for the Month "Most people never realise that all of us here shall one day perish. But those who do realize that truth settle their quarrels peacefully." Dhammapada, ca 500 BC.

VK3 Notes

Murray Lewis VK3EZM

Remembrance Day Contest: Rumours Become Reality

Last month I mentioned there had been talk by some amateurs about changing the rules of the Remembrance Day Contest for this year. It was a great surprise to read in the July issue of this magazine that rules for the RD Contest to be held on 12 and 13 August, have been considerably altered. Among the changes, it has been decided that complete contest logs and summary sheets must be submitted. The previous requirement for submission of summary sheets only, has been scrapped.

The manner in which the winning WIA Division is determined has also been changed. At the time these notes were going to press, WIA Victoria was making internal WIA inquiries in attempts to discover how the rule changes occurred.

Despite these changes, Team Victoria, winners of the past five RD Contests, will do their utmost to achieve another victory this year. It will be an extremely difficult task, faced with the changed contest rules and the confusion created by them. Basically, every VK3 who entered last year's contest must enter again this year, and encourage at least one other VK3 operator to enter. We need your support.

Please read the new rules which appeared in the July 1995 issue of *Amateur Radio* magazine, pages 30-31. Do your bit to help Team Victoria defend its title of RD Contest Champion. A win this year will make history by creating an unprecedented six victories in a row. Heads high Team!

Database Update

Perhaps you have recently obtained a callsign, or changed your callsign, or

changed your address. If you have, please let WIA Victoria know the details, so that the membership database can be updated. The QSL Bureau should also be advised of any changes, to ensure the correct distribution of QSL cards. Please write to either the Membership Secretary, or the QSL Bureau, WIA Victoria, 40G Victory Blvd, Ashburton 3147. Information sheets on the QSL Bureau, a free membership service, are also available on request.

Club News

WIA Victoria welcomes the reproduction of its broadcast news and information in club newsletters. Major items which are included in the voice broadcast through VK3BWI are also put in the packet network under the callsign VK3WI on BBSs serving Victoria. Editors of club newsletters and other members find the packet news service a convenient way to obtain information, which can be located among the hundreds of other packet messages by looking for "News and Info" from VK3WI.

Each of the VK3WI bulletins includes a number, indicating its date and sequence. Several "News and Info" bulletins are sent for each broadcast. Major items of news which break between voice broadcasts are immediately announced on VK3WI packet bulletins, and included in the next VK3BWI broadcast.

It is disappointing that most WIA Victoria affiliated clubs have not

publicised their activities through the broadcasts. A letter to the clubs about this matter achieved minimal response. A WIA Victoria councillor is now telephoning office bearers of each club to ask them for written material suitable for VK3BWI and VK3WI broadcasts.

Propagation Beacons

Six metre band enthusiasts often track the progression of propagation by listening for TV and utility signals below 50 MHz. In Europe amateur radio beacons on a centre frequency of 40.68 MHz, to help with propagation monitoring, are being considered. Is there any interest in Australia for such an allocation for amateur beacons? WIA Victoria is prepared to put this matter on the WIA/SMA Liaison Agenda if the idea has support among the membership. Please register your support for the WIA to seek a 40 MHz allocation by writing this month to the WIA Victoria Secretary.

VK6 Notes

John R Morgan VK6NT

June General Meeting

The volunteer speaker at the June General Meeting was Will VK6UJ, who is well-known to readers of *Amateur Radio* for his regular "Repeater Link" column. Will had chosen the topic of Computer-Aided Design (CAD).

After trying a number of CAD software systems, Will had settled on the "Draft

Choice" shareware package as his favourite, and he showed the meeting how it can be used for drawing circuit diagrams, as well as both two- and three-dimensional designs. Will's practical demonstration included many examples of interesting repeater-related circuits, and was greatly enhanced by use of an LCD device attached to the standard overhead projector, so that the entire audience could clearly see the computer's colour screen.

Following the demonstration, the business part of the meeting was curtailed by the illness of numerous Councillors, and by the fact that the position of Secretary was vacant.

The VK6 Division meets on the third Tuesday of each month, at the Westrail Centre, East Perth, commencing at 8 pm. The bookshop and QSL bureau open at 7 pm. All interested persons (members and non-members, licensed or listener) are encouraged to attend. Free coffee and biscuits are available at "half time".

Club Station VK6QC

The members of Club Station VK6QC, which is located at the Recreation Centre of the Paraplegic-Quadriplegic Centre in Shenton Park, would like to express their thanks to the WIA (WA Division) for a recent donation of \$300 worth of up-to-date technical books. These will form the core of a technical library, without which the Club's NAOCP classes could not have started.

WIA News

More News on the Hobby's 50th Anniversary of Recommencement

Further news of historic early contacts between amateurs, following the recommencement of amateur radio in late 1945 after the end of World War II, has been received by Herb Stevens VK3JO.

A copy of a log from Jim Gowen VK2ZC records his first post-war contact on 5 February 1946, with VK3AHM on 28 MHz, the first band released. Interestingly, the log details many DX stations heard — W, VS and VE stations.

WIA QSL Collection custodian, Ken Matchett VK3TL, has

unearthed QSL cards which reveal something of a mystery. Among cards from VK3DG, one confirms a January 1946 contact with VK3ND on 7 MHz, but the 40 m band wasn't released to amateurs until later that year!

Herb VK3JO is providing a focal point for research into the recommencement of amateur radio after World War II. He's keen to receive further information about the immediate post-war era of amateur radio to compile an article for the December issue of *Amateur Radio* magazine. He can be contacted at his Call Book address. (Thanks to Victorian Division President, Jim Linton

VK3PC, for details on the above item).

Meanwhile, Canadian amateurs have been authorised to use special prefixes to mark the 50th anniversary of the end of World War II. According to *The ARRL Letter* of 20 June 1995, from 0000 UTC on 8 July, through 2359 UTC on 8 September, Canadian amateurs may use the following special prefixes, as listed (regular prefix, then special prefix): VA2 — XK2; VA3 — XK3; VA7 — XK7; VE1 — XK1; VE2 — XJ2; VE3 — XJ3; VE4 — XK4; VE5 — XK5; VE6 — XK6; VE7 — XJ7; VE8 — XK8; VE9 — XK9; VO1 — XO7; VO2 — XO8; VY1 — XN7; VY2 — XN8.

Maintenance Visit to Tic Hill

On Sunday, 19 June 1995, your correspondent accompanied three stalwarts of the West Australian Repeater Group (WARG) on their maintenance visit to the Tic Hill site, which is about 23 km North-East of Perth. At the highest point of the hill, surrounded by native bush, a small brick building houses the VK6RTH voice repeaters (146.800 MHz and 438.225 MHz) and digipeater (144.825 MHz). There is no mains power available, so the entire site runs from a set of 500 Ah solar-charged batteries.

The site had not been visited for more than a year, since access is extremely difficult. However, these blokes really knew what they were doing, and were well-prepared. Their six-wheel-drive ex-army truck had a built-in crane, and carried a generator and a compressor, amongst plenty of other useful equipment.

Users of the site's systems should thank Trevor VK6MS, Renzo VK6ZQA, and Peter VK6ZPE, when they next hear them.

WARG Meetings

The West Australian Repeater Group (WARG) meets on the first Monday of each month, at 7.30 pm, in the Scout Hall, on the corner of Welshpool Road and Gibbs Street, East Cannington. The even-numbered months are technical meetings, and the odd-numbered ones are business meetings, although this demarcation gets a bit blurred sometimes!

If you wish to join the WARG, and so help support their network of repeaters, please contact Christine VK6ZLZ, who is the Membership Secretary, on (09) 458-6218, or via PO Box 425, Cannington WA 6107.

Club Secretaries

Members who live in the country may be wondering why the content of this column is biased towards activities in and around Perth. The reason is, of course, that no material has yet been received from other than Perth. I just thought I would mention it, before anyone complained.

All material for inclusion in this column must arrive on or before the first day of the month preceding publication. Packet mail may be sent to VK6NT/VK6ZSE.# PER.#WA.AUS.OC, or write to PO Box 169, Kalamunda WA 6076, or telephone (09) 291-8275 any time.

"QRM" — News from the Tasmanian Division

Robin L. Harwood VK7RHH

The Divisional Council had a meeting in Launceston on 24 June, with representatives from the three Branches

plus an observer from the West Coast Repeater Group. The purpose of this meeting was to establish what are the immediate priorities and problems of each branch and what Divisional Council could do in assistance.

It is apparent that there are common issues which do affect them all. It was also useful for both Divisional Council and the respective Branches to have this interchange and it is planned to continue this communication on a more regular basis.

The Northern Branch has decided to pay the site fee of approximately \$600, after negotiations with the CAA. They are hoping that non-members of the WIA, who do use the VK7RAA repeater, will contribute donations to it's upkeep.

The Northwestern Branch has had a hefty increase in electricity charges, which is presently beyond their present budgetary plans. At their June monthly meeting, which was well attended by non-members as well as WIA members, the plight of the Branch was raised and ways to overcome the problem were actively discussed. It was pointed out that the Branch has as a service, provided various VHF beacons over the years, for the mainland hams. Maybe some users, who have utilised their beacons on 144 and other VHF channels, may like to contribute a small donation to have this facility continue.

The Southern Branch still has the saga of Mt Wellington and the NTA. As the dome on the mountain is still incomplete and the status of VK7RHT is still far from clear, the Branch is hamstrung with the very real possibility that they may have to relocate. The Mt Wellington site would be

ideal, if it could be retained, yet there is so much high-powered RF floating about there, from everything from pagers through to cellular phones, with four television channels plus four FM channels. A pay television system, also from the site, with up to eight channels on microwave distribution, is also scheduled to commence shortly, if not by publication time.

The meeting also gave all of us the opportunity to discuss another common issue. This is public liability insurance. Further discussion will be continued, after further research, at the next scheduled meeting at the end of this month.

There was concern expressed at the trend of some to aggressively push new technology to the detriment of existing systems and users. We are not against the development of new technological systems. Rather we see these complementing existing systems and not in competition. We also favour an orderly balanced plan where these newer systems can be trialed without causing any disruption to users.

I think that this combined meeting, between the Council and representatives from the Branches, was a success and improves communications between the two. It should enhance the consultative process between the Branches and Council, to the betterment of the WIA in Tasmania.

VK7WI has been trialing two 40 metre relays of the Sunday morning Divisional broadcast. The regular 7090 kHz transmission is usually based in the northern half of the island. A second relay is on 7080 kHz, based in the southern half of the island. We do welcome reports from interstate on these two relays, as we have had indications that some of the 7090 kHz signals have been selectively propagating. A similar 80 metre trial may also be considered later.

In conclusion, here are the meeting dates for August: Southern Branch on Wednesday, 2 August at 2000 hours at the Domain Activity Centre — VK7OTC; Northern Branch on Wednesday, 9 August at 1930 hours at Block "C"; Level Three, Room 17, Alanvale campus of Launceston Institute of TAFE; Northwestern Branch on Tuesday, 15 August at 1945 hours at the Penguin High School, Ironcliff Road, Penguin; and Divisional Council on Saturday, 26 August at 1100 hours at the Domain Activity Centre — VK7OTC.

Don't forget, with the 50th Anniversary Celebrations of the end of World War II, and as part of "Australia Remembers", to participate in the annual Remembrance Day Contest on the weekend of 12 and 13 August.

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**Help stamp
out stolen
equipment
— always
include the
serial number
of your
equipment
in your Hamad.**

Over to You — Members' Opinions

All letters from members will be considered for publication, but should be less than 300 words. The WIA accepts no responsibility for opinions expressed by correspondents.

QSY Contest?

As an operator new to contesting, I operated for a few hours in the recent VK Novice Contest, and made about 30 contacts. I was more than a little disappointed with a number of operators who set up on a frequency, and woe to any operator who tried to exchange with any one except them. As far as I'm concerned, no one has "their own frequency" from which other operators ought to be excluded.

Perhaps a "QSY Contest" may sort this one out, scored like this. Five points for the first contact on a frequency, four points for second contact, etc, and zero points for sixth contact. In order to get five points again, a QSY of at least 4 kHz is needed.

To keep a check on QSYS, the exchange might be FFPnn, where: FF is the frequency tens of kHz and single kHz. P would be the points I get for the exchange, and nn a serial number from 00 to 99.

As an example, if I work 3590, I would give 90501 as first exchange, 90402, 90303, then QSY to 3572, and give 72504, 72405, 72406. The more often you QSY, the more points per contact you get.

Confusing? Why not give it a try, it may produce some interesting results, and members would soon get used to it. The playing field would be levelled somewhat. Can't wait for the bedlam of the QSY contest.

Wally Hunt VK3JWH
62 Wales Street
West Footscray VIC 3012

To CW or Not CW — That is the Question

For what it's worth, I'd like to add my "two bob's worth" on the CW requirement subject. As an active amateur since 1955, I have witnessed many changes to the licensing rules and regulations. In my opinion, most of them have been for the good of amateur radio.

There are many instances in obtaining qualifications for any licence (ham radio, driving, etc) where a few of the requirements seem to be of no relevance. The Morse code requirement for the unrestricted amateur licence is universal. ALL Governments of the world still REQUIRE MORSE CODE for an unrestricted licence. Why? How relevant is CW these days? Is it really an "out-moded mode"? Why do the non-code

advocates want to access the top DX bands?

There's certainly been a lot of comment, both pro and con, and here's mine.

Amateurs are supposed to be able to assist with providing radio communications during natural disasters, and this they do with enthusiasm. During poor propagation or heavy QRM, which mode can get the messages through when others can't? Yep, CW! Granted, some of the digital modes might also be useful, but not always. Emergency communications must be as reliable as possible. So, knowing CW provides this extra mantle of reliability. Although a little melodramatic, it can truthfully be said that it is possible that someone could die if it were not for CW proficiency in a serious emergency during poor propagation.

CW is still relevant in commercial professional communications, too. It is definitely not an out-moded mode! I have just returned from Antarctica where I was a communications officer. We had to exchange weather information with a Russian expedition on a daily basis. Due to the very poor propagation most of the time, and language barriers, we found that the only reliable mode to use was CW. Yes, we had satellite access, SITOR and SSB, but none were as reliable or inexpensive as CW.

What is the real reason that non-code advocates want access to the top DX bands? Some are too lazy to learn the code or have been "brainwashed". They want an easy way to gain access to these top DX bands and they will continue to undermine the importance and relevance of CW. If they shout long and hard enough perhaps the Morse code requirement will be dropped. This would be one of the worst events in the history of amateur radio. The "quality" of operators might even deteriorate to the level of chaos of the Citizen Bands.

At the present time, non-code licences ARE available. They have access to all VHF/UHF/SHF amateur bands. They can use satellites, repeaters, etc to communicate in digital, CW, SSB modes. They can experiment, gain knowledge, share knowledge and enjoy that aspect of our great hobby, all without a Morse code requirement.

A simile I'd like to present is that of a licence to drive a family car to that of driving a racing car. The bottom line is, if you want to drive on the racing circuit, you have to gain extra qualifications. To

operate on the top DXing HF bands, you have to gain extra qualifications (ie Morse code proficiency). Can you imagine a race track "chock-a-block" with drivers holding only an ordinary licence? Can you imagine a top HF band "chock-a-block" with operators holding nothing more than a "glorified" CB licence?

I, for one, advocate the retention of CW for unrestricted amateur radio licences. But, how about this for an idea? Offer access to the non-DX voice only portions of the HF bands to no-code advocates. This would keep them "officially" off the CW portions and DX portions of the HF bands while still giving them access to the HF communications they desire. Allow them access to 28.7 to 29.7 MHz, 21.35 to 21.45 MHz, 14.3 to 14.35 MHz, 7.1 to 7.3 MHz and 3.7 to 3.8 MHz. (Perhaps not 20 metres! Ed)

That is quite a lot of HF SSB space for them, and it wouldn't affect the advocates of CW and serious DXing (those people who made an effort to pass the CW exam). The most positive aspect of this would be to fill up the little used portions of the HF voice sub bands and give access to the HF bands for non-code advocates.

But I will be one of the first to sell my equipment and resign from the amateur ranks if it should ever become anything like the chaos we hear on the Citizens Bands. Amen!

Edie De Young VK4EET
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Shailer Park QLD 4128

CW Comment

May I make a few points about Bob Hawksley's article **Morse Not Required** and about the CW mode in general.

Firstly his analogy that "one doesn't have to touch type to operate a PC" is a bit silly. If such a need did exist, I'd take this into account before purchasing one. I certainly wouldn't buy one and then try to change the rules later! No, I knew what I was getting into before I went for my licence.

Having said this, I must generally agree with Bob. There are many Novice licence holders who would lose me on the technical side of our hobby. Perhaps they deserve access to all the privileges that I enjoy, just on the strength of this.

However, what I really care about is being left alone to do my thing. I like to work CW, especially for DX, but find increasing pressure on the CW only portions of the bands. Apart from all the pirate SSB stations there are actually people who hold daily skeds in the CW portion of the band. The chaps on 10.118 MHz SSB know who I am talking about!

Finally, a few suggestions. Firstly, why not take a vote of WIA members? I'm sure that 75% of amateurs would vote to drop the mandatory CW requirement. Secondly, instead of mandatory CW, why not compulsory "gentlemen's agreements", the WIA band plans being the guideline. Bob and I would both be happy.

The only cloud on the horizon is that the WIA only represents about one third of all amateurs in Australia. And VKs only make up a small proportion of hams world-wide. Still, Bob, we can both dream, can't we?

**Mal Harrison VK6NV,
63 Alvah Street,
St James, WA 6102**

Interesting News

Two items of relevance to the Amateur Service appeared in our daily newspaper on 9 June.

In one, reporting the rescue of American pilot Capt Scott O'Grady in north-west Bosnia, stated, "Tuesday June 6: US monitoring equipment detects single Morse code transmission".

Rumour has it that the Australian Defence Force is to delete Morse code

from its teaching program. This raises two questions. Is the rumour correct? If so, WHY?

The second item announced the possibility of an FM radio service in the south-west of WA (situation not significant) with the possibility that two frequencies would be made available. It seems that one of the problems which the Australian Broadcasting Authority has is that a small number of video recorders use channel 4 as a link with a TV set. Their Director of engineering is quoted as saying, "We don't think it is reasonable to cause interference, even to a minority of people".

Given that the Federal Government has quite immorally assumed the mantle of the Deity to tax the spectrum which even they must realise they did not create, can we ask the whole to embrace the philosophy of the part (the ABA) and cut out the obscene interference to amateurs (another minority) caused by the pager system? Why should we have to wait until a federal election to get some satisfaction?

**Peter Hughes VK6HU
58 Preston Street,
Como, WA 6152**
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Novice Notes

Peter Parker VK1PK

Receivers — Part Two

Receivers — Part One looked at the types of receivers used for amateur band reception. This month we will look at receiver performance characteristics and their effects. Some receivers may fall short in areas which do not matter much, while others have failings which make them almost unusable. Where possible, I will mention receiver tests you can do without elaborate test equipment.

Sensitivity

A good receiver must be able to receive weak signals. That is, it must be sensitive. The importance of having a sensitive receiver increases with frequency. As frequency rises, the ambient RF noise level gradually falls. Transistor gain falls with ascending frequency also. Thus, a receiver may have good sensitivity on 80 metres, but poor on 10 metres. Whether a receiver has sufficient sensitivity can be ascertained by this simple test:—

Disconnect the antenna from the receiver. Switch on the set and adjust to the required band. Reconnect the antenna. If you hear a substantial increase in noise, then the receiver is

sensitive enough (any increase will merely increase the noise and not the readability of signals).

This test should be done with the receiver set to SSB or CW. For VHF FM equipment, comparison is needed against a receiver of known performance. Better, use a calibrated signal generator. On 80 metres, an SSB receiver that responds to a one microvolt signal is acceptable. On VHF, an FM receiver which shows substantial quietening on a 0.2 microvolt signal is performing well.

If the receiver sensitivity is too low, an RF preamplifier (preferably tuned to the incoming signal) can be added. This may help but might also degrade ability to handle strong signals. More on this later.

Selectivity

The ability of a receiver to separate signals is called its selectivity and is an important factor on crowded bands. A 6 kHz wide signal may be acceptable on 160 metres during the day, but would be inadequate for 7 MHz CW DX. For SSB reception, a receiver bandwidth of 2.5 to 3.0 kHz is good, while CW operators employ filters of 500 Hz or narrower. Narrow filters reject signals on adjacent

frequencies and so increase the readability of the station to which you are tuned. Modern receivers usually use a crystal filter, while older or cheaper sets rely on IF transformers alone for filtering. Some receivers use mechanical filters.

A crystal or mechanical filter in the receiver is desirable, as it will reject more unwanted frequencies. In Figure 1, curve A shows the selectivity characteristics of a fairly mediocre receiver, while curve B is typical of a crystal filter in a modern SSB receiver. The noise received by the receiver is proportional to the area under the filter's response curve, thus the crystal filter will reject more off-frequency noise.

Find a carrier and tune across it several times. If the signal abruptly disappears with only a small movement of the tuning knob, then it is likely that the filter in the receiver is a crystal or mechanical one.

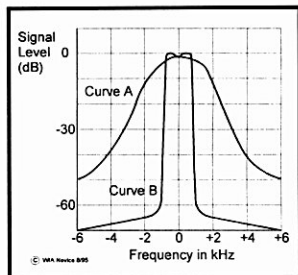


Figure 1 — Receiver selectivity curves.

If, on the other hand, the loudness of the tone only gradually falls away as its frequency rises to several kilohertz, then the set is less selective. Don't worry, the human brain is a marvellous audio filter and, with practice, you will soon be able to pick out signals amongst the noise.

Set the receiver up for SSB reception. If you can separate two conversations on frequencies only 3 to 4 kHz apart, then the receiver's selectivity is acceptable. CW operators will probably want a narrow (500 Hz) crystal filter, but audio filtering is an alternative. Such filters can be built from two 741 op-amps.

On VHF, tune in a weak FM simplex transmission. Ask a nearby amateur to transmit 25 kHz away. The weaker signal should still be readable in spite of the strong local signal. Since most VHF sets employ crystal filters, they are usually acceptable.

Frequency Stability

Once tuned into a signal, a good receiver does not drift. Most modern synthesised sets are very good in this regard, but older models sometimes

suffer problems. A drift of 100 or 200 Hz every thirty minutes would probably go unnoticed by most users. However, if you operate digital modes, better performance would be required.

Drift problems increase with ascending frequency. This is particularly the case with regenerative and direct conversion receivers, and superhets with a low first IF and free running oscillator. The construction techniques employed in the cheaper, older receivers are such that drift reduction may well require major surgery.

Drift can be minimised in direct conversion and regenerative receivers by building the set as you would a transmitter VFO, that is with rigid wiring, a metal box, good quality components, and voltage regulation, etc. Since most VHF receivers are either crystal controlled or synthesised, drift will rarely be a problem.

For casual listening, a small amount of receiver drift can be tolerated. In contrast, a receiver which drifts a kilohertz in just a few minutes is more trouble than it is worth, and only fit for the junk box.

Strong Signal Performance

Of increasing importance has been the strong signal performance of both HF and VHF receivers. A receiver should be able to resolve weak signals while remaining unaffected by nearby local signals. If you can only contact local stations on the HF bands, you will probably get by with a receiver of sub-standard signal handling performance, but the DXer would rapidly become frustrated with such a set.

In this area, older valve receivers often outperform their newer solid state counterparts, but less so with current designs. To test a receiver for strong signal performance, connect it to an omnidirectional antenna and tune around the band while a local station is transmitting, looking for weaker signals. If the local station's signal affects the weaker signal in any way, your receiver's signal handling is not as good as it should be. This effect can be heard on both CW and SSB transmissions.

Regenerative receivers, due to the non-linear (oscillating) detector, are particularly poor. Adding an RF preamplifier can reduce a receiver's strong signal handling capacity if its mixers and product detectors are designed only to cope with weak and medium strength signals.

The advent of pager transmissions just above the two metre band has made strong signal performance an important factor to consider when purchasing a two metre receiver. Unfortunately, many modern hand-held and mobile rigs are built down to a price, not up to a standard, and exhibit quite mediocre performance in this area. Their broadband front-end

tuning and weak mixers often limit their usefulness in many inner-city areas. In contrast, older crystal controlled ex-commercial transceivers, which have been converted to two metres, can often be almost immune to this problem.

Images

A good superhet receiver should not produce image signals or other spurious responses. Otherwise you will hear non-amateur signals while tuning the amateur bands. If strong enough, these signals can mar reception. A relatively high first IF frequency, sharp front-end tuning, and use of shielding within the receiver, guard against these problems which are more likely on the higher HF bands. Direct conversion and regenerative receivers do not suffer from images as no mixers are employed.

Other Factors

A receiver should be a pleasure to operate. Tapping the top of the case should not alter the frequency being received, while the tuning mechanism should allow for easy tuning of SSB and CW stations. Otherwise, it may be possible to modify the receiver by adding a fine-tuning (RIT — Receiver Incremental

Tuning) control using either a small variable capacitor or a potentiometer and varicap diodes.

An analogue dial is no handicap, but it is desirable that it can indicate frequencies to at least the nearest 5 kHz. For casual listening this is not very important.

An "S" meter is useful if you intend to use the receiver as a piece of test equipment, but does not contribute one iota to overall receiver performance.

A workable HF receiver should receive at least SSB and CW for amateur reception, though AM and FM capabilities would be a bonus. A novice receiver for VHF need only receive FM signals.

Conclusion

It might seem that an expensive receiver is necessary for successful amateur band listening. This is not so!

A well built direct conversion receiver, or a good second hand valve communications receiver are both capable of excellent performance on the HF amateur bands. On two metres, a basic scanner should suffice for monitoring local activity.

*71 Garran Place, Garran ACT 2605

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Pounding Brass

Stephen P Smith VK2SPS*

Over the next couple of months I will review a number of very interesting and informative books relating to telegraphy which, I believe, will assist a number of beginner operators in overcoming initial difficulties when faced with this mode of operation.

The first book we will look at is the *Story of the Key* by the late Louise Ramsey Moreau W3WRE. The *Story of the Key* was first published in *Morsum Magnificat*, edition six (1987), and continuing through to edition eleven (1989). This authoritative six-part series covered the history of the telegraph key from its humble birth to the keys of today.

Some readers might be lucky enough to have the above editions, or the earlier Dutch language editions of *Morsum Magnificat*, numbers 14 to 19 which appeared from 1986 to 1987.

The *Story of the Key* is the combined series of articles as mentioned above, containing 60 pages in a soft cover format, with over 75 indexed photographs. Some of the photographs which appear in the book have been reprocessed and, in some cases, substituted with better detailed ones.

Before I detail some of the book for you, I believe a little history on the author, the late Louise Ramsey Moreau, is called for first. Louise was born and raised in Johnstown, PA, where she attended school and university in Pittsburgh. During her university studies Louise became fascinated with telegraphy while studying early American History. To satisfy her interest she purchased a few keys, believing she had covered the field of telegraphy.

From this modest start grew a collection of over 300 keys, ranging from early hand keys of the 1840s to modern electronic keys of this century. Louise was a highly respected telegraph historian, writer and collector of Morse keys. One of the first books written by Louise covered some 3000 years of early communications.

For her writings and devotion to telegraphy, Louise received many awards including the Houck Award for telegraph history in 1974; being nominated in 1976 to the telegraphic Hall of Fame; the Presidents Award from the YLRL for her investigation into the history of women in the communications field; and, in 1980, the Ralph Batchelor Memorial Award from

the Radio Club of America. Louise was also a member of the ARRL SOWP and MTC.

Louise held the call of W3WRE and worked CW 99.99% of the time. Sadly, on 15 April 1994, Louise became a silent key at age 77. Her collection of keys was passed on to the "Antique Wireless Association".

Turning to the book *The Story of the Key*, we find it is broken down into six chapters, (1) Milestones; (2) Variation on the Vail Theme; (3) The "Lighting Slinger" Vibroplex; (4) Good Guys, Bootleggers and Bastards; (5) Semi-automatics...Open Season; and (6) The first of King Sparks. Also included is American Telegraph Instrument Makers 1837-1900, and an index to the keys pictured in the book.

Chapters (1) and (2) look at the birth of the key invented by Alfred Vail in 1844, and used in the famous transmission from Baltimore to Washington. The key was named the "Correspondent".

As telegraph spread, the key underwent major changes. Some notable ones were the "Camelback" in 1848, when Thomas Avery introduced the coil spring in 1850, and when the solid trunnion lever was introduced in 1881 by James Bunnell.

Chapter (2) goes more into design changes of hand keys, covering manufacturing organisations of the time.

Chapter (3) covers the production of the semi-automatic key known as a "Bug" or, the Australian term, "Jigger". Horace Martin brought out the "Autoplex" then the famous "Vibroplex" which the company is still producing to this very day.

Chapter (4) looks at a number of manufacturing organisations of the time copying Martin's patents. Some of the companies covered include Dunn, McDonald and Dixon. One company I thought particularly interesting was the "Megograph Company".

As you know, Vibroplex made dots by creating tension in the spring, while Megograph utilised release of spring tension. This design allowed Megograph to stay in the running with Vibroplex.

Chapter (5) continues with semi-automatic keys. Companies discussed are Bunnell, Lytle and Logan, just to name a few.

Chapter (6) is dedicated to "Spark Transmission" and keys used during this period of time before the mode was outlawed in the mid 1920s. To some people a key is a key. However, "Spark Keys" are easily identified by the size of the contacts giving a much broader surface area. Some measured from half an inch, to one inch in diameter.

The *Story of the Key* concludes with the American Telegraph Instrument Makers (1837 — 1900) to include address, city of

production, dates and products produced.

I highly recommend this book to all amateur radio operators, especially those of us who collect keys, as a fine reference source, and an excellent means of key identification. The book makes interesting reading and is a must for any telegraph book collection.

The book can be obtained direct from the publishers, G C Arnold Partners, 9 Wetherby Close, Broadstone, Dorset BH18 8 JB, England. Price is four pounds and

25 pence (UK) by surface mail and four pounds 75 by air mail. Orders by credit card, Access, Eurocard, Mastercard or Visa are welcome by phone or fax on 01202658474 (overseas + 441202658474).

I wish to thank the WIA Publications Committee for inviting me to review the *Story of the Key* and lending me the review copy.

*PO Box 361, Mona Vale NSW 2103

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Education Notes

Brenda M Edmonds VK3KT* Federal Education Coordinator

In my last column I wrote about the setting up of the STARS*** Task Force to assist in the promotion of amateur radio in countries in Region 3, and outlined some ways in which Australia and the WIA can assist.

There are many ways individuals can help without a lot of effort, and without travelling overseas. Most of us talk to overseas amateurs at some stage, and amateurs have a tradition of being willing to help newcomers to the hobby. If the amateur population of a country is very small in proportion to its total population, the amateurs may be greatly in need of the type of contact with other amateurs which we take for granted. Whether it is technical discussion or simply general chat about local conditions and experiences, all such contacts offer some support to the more isolated amateurs. If assistance or advice is sought, I am sure most Australian amateurs are willing to help.

The major Australian cities play host to many overseas students at secondary or tertiary institutions. These students may be already familiar with amateur radio, in which case contact with local amateurs can be very helpful to them, or they may be unaware of it as a hobby. Are amateurs willing to take some of these students into their shacks to show the possibilities and scope of amateur radio?

Region 3 of the IARU publishes a newsletter several times a year, which is distributed to all member societies. Items for this publication are always welcome. Material which shows amateur radio in a positive light, such as reports of WICEN activities or involvement of amateur radio in community activities, can be used by amateurs in other countries as evidence of the value of amateur radio to the community. The WIA has agreed to pass on such information, but it needs WIA

members to submit the local information in the first place.

Many Australian towns have developed a "sister city" agreement with an overseas city. In some instances, I know, amateur radio has been used to reinforce that link. Any amateurs involved in such arrangements may consider working towards strengthening the link by more conscious and considered use of amateur radio.

A copy of *Amateur Radio* magazine is sent each month to the IARU representative of each society in Region 3. Perhaps some of our many clubs would consider sending a copy of their magazines or newsletters to some of the emerging societies, or sponsoring a subscription to one of the well known amateur radio journals for that society.

The WIA representatives on the STARS*** Task Force will be very pleased to receive any further ideas from members. If they are sent to me care of the Federal Office, I will ensure that they are passed on and considered.

I will also try to keep members informed of developments as they occur.

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Silent Keys

Due to space demands obituaries should be no longer than 200 words.

The WIA regrets to announce the recent passing of:-

MJ (Michael)	YEATES	L40321
RV (Ray)	JOHNSON	VK2AVR
R K	DODD	VK2RE
K C	HAMMOND	VK6KN

ar

Repeater Link

Will McGhie VK6UU*

CTCSS Distortion

An interesting and perplexing problem has arisen with one of our repeaters, VK6RMW. The site is 100 km south of Perth and is a wide coverage system with a large number of users. This repeater re-transmits the WIA news via a feed from Perth direct on the repeater's input frequency. A CTCSS tone of 67 Hz placed on the feed from Perth turns off the time out and Morse ident. The reason for removing the Morse ident is because this repeater is used as a source for a re-transmission on 80 metres. The Morse ident on 80 metres might be a problem, hence its removal.

During the WIA News this repeater transmits a 77 Hz CTCSS tone for future use in the expansion of the WIA news coverage. The 67 Hz tone from Perth to this repeater does not pass through the repeater without attenuation, for a couple of reasons. If it did then it could have been used to do the job that the 77 Hz tone is intended for. The 67 Hz tone from the repeater's receiver is attenuated by the poor low frequency response of the phase modulator in the transmitter and is too low for any decoding equipment listening to this repeater.

Why not use the same frequency of 67 Hz, you must be asking? The reason is that, in a phase modulated repeater

transmitter, most of the 67 Hz is attenuated, but not all. With direct FM modulation there is little attenuation. This re-transmitted 67 Hz mixes with any added 67 Hz in the repeater and, because the two are not phase and frequency locked, the result is an addition and subtraction between the two. The result is the 67 Hz output goes up and down in level, causing any decoder trying to decode the tone, to drop in and out of lock. The solution is, of course, to remove the incoming 67 Hz by means of a high pass audio filter, but this repeater did not have one fitted. It was easier to install a different tone generated on site when the incoming 67 Hz was detected. Hope you followed all that.

Hum?

With the introduction of the 77 Hz CTCSS tone on the repeater's transmitter, reports of hum started to filter through. Now, on installation of the 77 Hz encoder, test equipment to set up the correct level of this tone on site did not work properly. Therefore the tone level was set by slowly increasing its level until it could be decoded on a hand held. Not very accurate but it was the best that could be done.

When reports of hum on the WIA news re-transmission were received, it was

assumed that the 77 Hz had been set too high and would need to be adjusted on the next site visit. An added complication was that a fault had developed on the link transmitter from Perth, placing 100 Hz power supply hum on the transmission. In the process of fixing this problem, the output of the repeater (VK6RMW) was examined more closely.

The 77 Hz CTCSS tone on this repeater was not as high as was originally thought. It was producing a deviation of 650 Hz, instead of 500 Hz, and was not high enough to account for the audible hum that could be heard on the transmission. I had simply listened to the transmission and concluded that the setting of the level during the installation had been too high. In fact, it was almost spot on. So why could the 77 Hz tone be heard? Closer inspection on a CRO of the repeater's output showed that the 77 Hz tone was not a good sine wave. It was distorted, not much, but enough to produce harmonics. It was these harmonics of the 77 Hz tone that were being heard, not the 77 Hz. The next question was, why was the 77 Hz tone distorted?

Phase Modulation

The 77 Hz CTCSS encoder module fitted to the repeater produced a low distortion tone. This was checked thoroughly before the unit was installed. The reason for the distortion was the type of modulation used, phase modulation. This repeater was an earlier design using the ever reliable FM 828 but not fitted with the direct FM modification. The receive

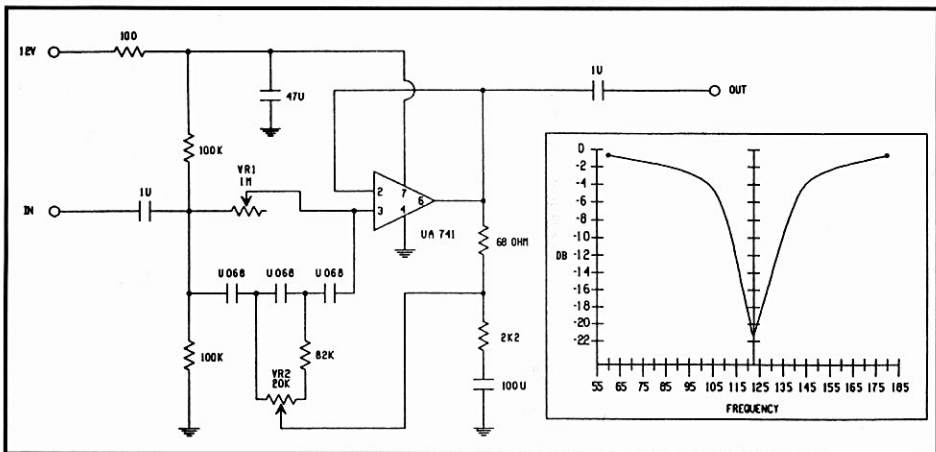


Figure 1 — Circuit diagram of the CTCSS notch filter, and a frequency versus dB attenuation graph of the notch filter centred on 123 Hz.

audio and 77 Hz tone are fed into the existing phase modulator.

In order to achieve the 500 Hz deviation at 77 Hz, the phase modulator has to be driven fairly hard, as phase modulators produce deviation proportional to level and frequency. As the frequency goes down, for the same audio input, the resultant deviation goes down. In a phase modulator deviation is proportional to rate of change. The harder you drive a phase modulator the higher the distortion. Previous tests I had done on phase modulators surprised me just how much distortion.

A 1 kHz tone producing 5 kHz deviation measured as high as 10% distortion. I had not measured the distortion of a low tone like 77 Hz but, due to the higher level required to produce even small amounts of deviation, this was most likely the cause of the distortion and, as a result, the harmonics being heard.

The fix is to replace the phase modulator with a direct FM modulator of the transmit crystal. Direct FM modulation produces the same deviation for a given level regardless of the modulation frequency and inherently has lower distortion. The result is that only a small 77 Hz tone level is required to produce the required 500 Hz deviation, and there is little distortion.

The Point

The point of all this is, if you place a CTCSS tone on a repeater that uses phase modulation, be prepared to hear the tone to some degree. The amount you hear the tone will also depend on the receiver you are listening to. Speaker size, and low frequency cut-off in many newer transceivers to remove CTCSS tones, all play a part. Phase modulated repeaters will produce harmonics of the CTCSS tone and there is little you can do, unless the phase modulator is changed for direct frequency modulation of the transmit crystal. Using direct frequency modulation results in the CTCSS tone being almost undetectable, particularly below 150 Hz.

Nothing Out

If your repeater has a CTCSS tone on its transmission, and has good low frequency response due to direct frequency modulation of the repeater's transmitter, then a problem can occur. I have covered this before so I will be brief. Many transceivers, when in the CTCSS decode mode, also transmit the same tone when in transmit. This can not be turned off. The result is the tone transmitted by the user mixing with the repeater's tone and, as the two are not exactly on the same frequency, adding and subtracting at a rate dependent on

the difference between the two frequencies. This causes other users' receivers to mute at a regular interval when in the CTCSS decode mode. What is required is an audio filter to notch out the tone as received by the repeater so it is not retransmitted along with the encoded tone on the repeater's transmission.

Circuit Diagram

The accompanying circuit diagram is an audio notch filter that will notch out a given CTCSS tone by about 20 dB. It has a notch range from below 67 Hz to above 250 Hz, with an overall gain for all other frequencies of 0 dB. The two pots VR1 and VR2 are multi turn. VR1 sets the balance of the notch network and VR2 the frequency. A CRO is the easy way to adjust these two pots. Inject the CTCSS tone into the input and look at the output on the CRO. Adjust VR2 for best rejection of the tone and VR1 for best symmetry of the resulting wave form. The result should be the remaining harmonics of the CTCSS tone. If you do not have access to a CRO then a multimeter on the AC range should work. Adjust VR1 and VR2 for minimum reading.

Also included in the diagram is a frequency versus dB attenuation graph of the notch filter centred on 123 Hz. Note the 6 dB down points of the filter are about plus and minus 30 Hz, so several CTCSS tones close to 123 Hz would also be attenuated while most others would not. If all CTCSS tones are required to be attenuated, then a high pass filter is required that rejects all tones below a given frequency. I have such a filter installed in one of our repeaters in VK6

and will present the circuit diagram in a latter addition of *Repeater Link*. If you require the circuit sooner please contact me.

29 MHz

Regular readers of *Repeater Link* will be aware of the 29 MHz gateway idea and the efforts to place these systems on air. Correspondence from the SMA indicates that it is legal to place such a gateway between an existing repeater and a simplex frequency using one of the repeater frequencies between 29.500 and 29.700 MHz. Our repeater group has applied for a licence using 29.680 MHz simplex for this purpose. Links to other repeater systems using the same idea are not allowed as no link frequencies are designated below 50 MHz (the next area to try and bring about change). Efforts so far have gone as far as FTAC, where it has stopped due to no WIA band plan frequencies set aside for this use.

Correspondence from the SMA is of considerable interest as the addition of the 29 MHz simplex gateway can only be licensed as a separate callsign, attracting a licence fee and an additional fee for investigation of the licence application. Efforts will be made to see if the SMA will itemise what is involved in this procedure.

Also of considerable interest in this correspondence from the SMA was reference to the "new" repeater regulations not being available till December 1995, another 6 months away at the time of writing this in late June!

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VK6UU @ VK6BSB

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Spotlight on SWLing

Robin L. Harwood VK7RH

During these winter months, I have been concentrating increasingly on the lower HF allocations, due to the combination of low sunspots and poor propagation. It has been interesting to hear many American international shortwave broadcasters have opted to use non-standard frequency allocations in the 5 to 6 MHz range. I have mentioned before that Tennessee's WWCR uses the 60 metre tropical band for their programming within the North American continent. Now I have noticed WEWN on 5865 kHz in Dutch with the Rosary. Other stations I have heard are WHRI, in South Bend, Indiana on 5745 at 0557 UTC, and an unidentified station carrying Dr Gene Scott's so-called "University Network" on 5810. It is possibly the former KCBI in

Dallas, which is owned by that network. The same program was simultaneously broadcast from WWCR on 5935 and KVOH in Van Nuys on 9785 kHz.

The increasing use of these channels has caused problems for some Australian fixed and land mobile stations which are licensed to use them by the SMA. When Monitor Radio International fired up on 5850 kHz, the Australian authorities protested to the FCC about significant co-channel interference and MRI had to alter their frequency. Fortunately, other international broadcasters have not followed the example of these American independent/religious semi-commercial operators.

With the sunspot minimum probably now at its trough, I would expect that the

slow haul back to reasonable propagation could see higher allocations gradually come back. I think the use of frequencies outside the normal allocations will continue, however. These operators seem to want the almost impossible luxury of a clear channel.

International broadcasters are frequently mentioning that they are now on satellite systems and quote details of what transponder and subcarrier are being employed. This trend is most apparent in programming directed to Europe and North America. Some wiser heads in the industry have been evaluating this and have come to the conclusion that the numbers of individuals using the appropriate technology can be measured in the hundreds and not the millions who have shortwave access.

Later on this year, there is another World Administrative Radio Conference being held in Wiesbaden Germany, where the subject of direct satellite broadcasting is on the agenda. As you are no doubt aware, the receiving technology for the proposed frequencies will be sophisticated and costly and certainly not available in commercial quantities at the present time.

There are two differing technologies competing, one European based and the other in the United States. The choice of frequency allocations in Europe and North America for direct satellite broadcasting is also non-compatible. The industry has not easily forgotten the AM stereo fiasco, where four competing systems were trialed in the USA. The manufacturing industry, as a result, were reluctant to run four different receiving systems and AM stereo receivers were neither produced or widely promoted by them. The Motorola system as used in Australia eventually became the industry standard but, by that time, FM had gained market dominance.

DSB is mainly used as a point to point between the international broadcasters

and co-operating AM, FM or cable operators who either give time or lease their facilities to such stations as DW, BBC World Service, RFI and the VOA. There are very few individuals with their private receiving setups. It is also worth noting that the majority of the shortwave listeners are in developing countries in Asia and Africa. These satellite receiving systems will be beyond them and cheap shortwave analogue models are more readily available. Hence, you can easily see that the demise of shortwave broadcasting is not imminent.

The use of satellite technology is revolutionising maritime and aeronautical communications, especially in regions that were formerly dependent on HF communications. INMARSAT has largely taken over telephone and telex traffic from

all but the smaller marine vessels. Some fleets have not yet converted and will still require HF for a few years. Some carriers on HF are still more economical than INMARSAT, yet the costs are rapidly coming down.

Does anybody know if the Australian fidonet echo OZ-SW is still operational? My provider has not run any messages in it for nine months and my pleas seem to be unanswered. I do receive the Internet "rec.radio.shortwave" echo. However, this echo is often not relevant to Australian interests.

Well that is all for this month. Until next time, the very best of listening and 73.

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Technical Correspondence

All technical correspondence from members will be considered for publication, but should be less than 300 words.

The Choice of ATUs: L Z or T?

The article *T-Match Antenna Tuners* by "The Two Rons" (Random Radiators, *Amateur Radio*, June 1995, page 12) made very interesting reading indeed. It was kind of them to make reference to my recent published work. While I am in total agreement about being their "good friend", the remainder of that sentence is the exact opposite to what I took some pains to point out!

For quite fundamental reasons, there are certain combinations of load resistance and reactance with which an L-Match cannot cope, but a T-Match can. Exactly the same difficulty applies to the Z-Match. However, the two-coil version neatly side-steps this problem; changing the coil shifts the "black hole" to another region. This property makes it, in effect, a universal coupler. The single-coil Z Match, as published, must have its "black hole" in a region not normally encountered by amateurs, but it must exist somewhere!

One can understand the preference shown by manufacturers for the T-Match. The L has an awkward discontinuity in the transition from below to above 50 Ω . The whole thing needs to be switched end for end (this is not really a problem for homebrewers). The T can cover a wide range of loads, without any "black holes". However, it imposes a third variable for the operator to adjust. Certainly, it is capable of higher efficiency, but this is only relevant for quite high resistance loads.

The adjustment of "Q" can, however, be quite useful in the suppression of harmonic radiation. ("But", you say, "it's a high pass filter!" True, but please bear with me just a little.)

A long coaxial link between the rig and a high Q ATU acts as a dissipative harmonic filter. The higher the Q of the termination, the greater the mismatch for harmonics, and the higher the harmonic SWR and hence the higher the dissipation. Likewise, the greater the length of coax, the greater the loss for harmonics, with negligible effect on the matched fundamental signal. The harmonic energy is safely converted into heat. It is quite unrewarding to filter harmonics from an antenna system, only to radiate them from an earth lead! This is quite a consideration where the shack is at some elevation above ground. (Using this technique with 60 feet of coax, I operated 100 W on all bands into a tuned antenna only ten feet from an indoor TV antenna, with no TVI whatever on any channel.)

It should be born in mind that either the L or the Z can easily be converted into an equivalent T by the simple expedient of adding series reactance to the output.

So what system to use? My choice would be an L for a random wire, a Z for a balanced system, and a T for a voltage fed antenna or if TVI is a problem.

Graham Thornton VK3IY
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**Sign up a new
WIA member
today. We need
the numbers to
protect our
frequencies and
privileges.**

VHF/UHF — An Expanding World

Eric Jamieson VK5LP*

All times are UTC.

Two Metres and Above

A most unusual occurrence for winter was a slow moving high pressure system up to 1036 hPa, which encompassed a large area of the south-eastern portion of Australia. It first came to our notice on 19 June and continued through the Solstice to 23 June, five days of enhanced propagation favouring 144, 432 and 1296 MHz, but also briefly on 50 MHz, and involved operators in VK1, 2, 3, 5 and 7.

Fred VK2YZU, at Peake Hill, near Dubbo in central NSW, phoned me at 0500 on 20/6 to say he was hearing the VK5VF beacon on two metres. I could not hear Fred, but I did leave a message on Roger VK5NY's answering machine that the band was open. When Roger returned from work he quickly assessed the situation and started the ball rolling, although he had worked a number of VK3s and VK7XR the night before, so my message was all he needed to push things along. I tried to alert Doug VK4OE but could only obtain an engaged signal.

the entire area. Such extreme conditions one generally assumes not to be conducive to sustained enhanced propagation. Very strange.

There appeared to be no operation from VK6, but this is not aided by the news that the Albany beacon, VK6RTW on 144.465, has been closed for the winter! The weather maps for 21/6 and 22/6 indicate the extent of the large high pressure system centred near Melbourne. The better conditions did not reach to Sydney which appeared to receive only the spillover from the conditions in central NSW.

From the VK5 end, Roger VK5NY was in the prime position, operating from his mountain-top mansion near Mount Wilson, PF94, with contacts throughout the period to the other States which were involved. There is no doubt the propagation favoured the inland sited stations. Here at Meningie I was on the air each day but could not work the number of the stations which were available to Roger. My house is less than three metres asl, despite being 15 km from the coast. Bill VK5ACY on Kangaroo

VK3AFW 5x9; 1207 70 cm VK3AUI 5x2-5; 1216 2 m VK3AUI 5x5; 1230 2 m VK3KWA 5x6; 1249 2 m VK3BRZ 5x9; 1252 70 cm VK3BRZ 5x2-5; 1300 70 cm VK3KWA.

20/6: 0826 2 m VK5MC 5x9; 0830 2 m VK5LP 5x9; 0850 2 m VK2YZU 5x2; 0925 2 m VK2EMA 5x9; 0932 2 m VK2ZAB 5x2; 0939 70 cm VK2EMA 5x4-7; 1005 2 m VK3DUT 5x2; 1053 2 m VK1DO 5x2; 1113 2 m VK1BG 5x3; 1115 70 cm VK1BG 5x4; 1143 2 m VK2FLR 5x2; 1153 2 m VK5ACY 5x9; 1156 2 m VK3BRZ.

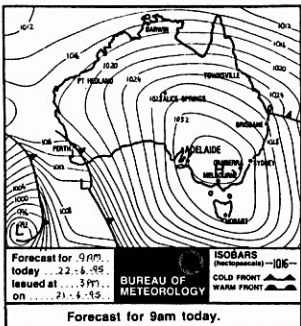
21/6: 0032 2 m VK3ZQB 5x9; 0033 2 m VK3AUI 5x8; 0036 70 cm VK3AUI 5x2-3; VK3, 5, 7 beacons on 2 m; 0432 2 m VK3AUI; 0434 2 m VK3ZQB; 0806 2 m VK2EMA 5x6-7; 0831 2 m VK3DUT 5x5; 0947 2 m VK3KWA 5x8; 1001 70 cm VK3KWA; 1043 2 m VK3AFW 5x8; 1056 2 m VK3AXH 5x9; 1057 2 m VK3BRZ 5x2; 1059 70 cm VK3AXH 5x2; 1101 70 cm VK3BRZ 5x2-4; 1129 2 m VK3ZQB 5x5; 1147 2 m VK3AFW 5x5-6; 1149 2 m VK7XR 5x2; 2243 2 m VK3AFW 5x9; 2246 70 cm VK3AFW 5x6-9; 2310 2 m VK3AFW 5x2; 2314 VK3 repeaters.

22/6: 0943 2 m VK3AUI 5x9; 0946 2 m VK3DUT 5x9+; 0951 2 m VK3EW 5x9; 0956 2 m VK3AJN 5x6-9; 1003 70 cm VK3AJN 5x2; 1009 2 m VK3KWA 5x6; 1010 70 cm VK3AUI 5x2-5; 1016 6 m VK3DUT 5x9; 1019 70 cm VK3ZGL 5x5; 1023 23 cm VK3AUI 5x2; 1028 23 cm VK3KWA 5x2; 1034 23 cm VK3ZGL 5x2-9+; 1106 2 m VK3ALZ 5x9; 1111 70 cm VK3ALZ 5x5-9; 1112 70 cm VK3BRZ 5x2-6; 1115 23 cm VK3ALZ 5x6-9; 1129 70 cm VK3AFW 5x6-9; 1135 2 m VK3CY 5x8-9; 1138 70 cm VK3CY 5x7.

23/6: 0028 2 m VK3ZQB 5x9; 0029 2 m VK3BRZ 5x9; 0033 70 cm VK3BRZ 5x5; 0034 70 cm VK3AUI 5x2-3; 0037 2 m VK3AUI 5x8; 0045 2 m VK5ACY 5x9; 0046 6 m VK3BRZ 5x1-2; 0122 2 m VK3EU Q5.

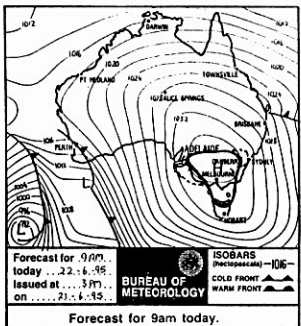
Roger had two contacts on 6 metres, 43 on 2 metres, 19 on 70 cm and four on 23 cm. It is worthy of note that the 23 cm contacts occurred towards the end of the fourth day only. The two six metre contacts are interesting, the first on 22/6 at 1016 with VK3DUT at 5x9 almost suggesting an Es component providing short skip. The other on 23/6 at 0046 to VK3BRZ at 5x1 is more in keeping with the tropo propagation.

Overall, signal strengths varied considerably at VK5NY as they did here. I noted that, at first, Roger was working stations to 5x9 which were inaudible here, then conditions changed and some stations came to me. On two metres I worked VK2YZU, VK2EMA, VK3KWA, VK3BRZ, VK3DUT, VK3ZQB, VK3ZGL, VK3AUI, VK3ALZ, VK3AFW and VK3CY. On 70 cm I managed VK2EMA, VK3BRZ, VK3ZQB, VK3ZGL, VK3AUI and VK3ALZ.



Map 1 — Weather map from The Adelaide Advertiser showing the extent of the high pressure system (thanks to the Bureau of Meteorology).

It is interesting to note that, during the period of operation, Sydney had some of its coldest weather for 96 years, and there were wide-spread frosts and snow over much of the involved areas of NSW, Victoria and Tasmania. On 21/6, the temperature range in the capital cities was, Adelaide 6-15, Melbourne 8-11, Hobart 4-9, Canberra -1-9, Sydney 7-10. Strong winds and rain were prevalent over



Map 2
The same map but showing the footprint of the coverage of enhanced conditions. The dotted line is the area on the fringe of the better conditions.

Island was there but did not enjoy particularly favourable conditions. Neither did Phil VK5AKK at Hallett Cove, Barrie VK5KCC at Gawler or John VK5PO at Kapunda. Adelaide stations were strangely silent.

Following is the log from Roger VK5NY:

19/6: 1155 2 m VK7XR 5x2; 1205 2 m

On 23 cm I tried with VK3AUI and VK3ZGL but was unable to complete a QSO. VK1DO, VK1BG, VK2FLR and VK7XR were all heard weakly on two metres but they obviously did not hear me. No sign of Gordon VK2ZAB.

At varying times on each day the beacons VK3RGL, VK5RSE, VK7RNNW were audible with VK3RGL making 579 at times. Also, on 21 and 22/6, VK3RTG in Melbourne was heard at strength one for long periods. This is the first time I have heard the Melbourne beacon for at least ten years.

A few points worth noting. Fred VK2YZU is at Peake Hill in the Dubbo region at QF47BG and 750 km from VK5NY, and Mark VK2EMA is at Tottenham at QF37QU, about 1000 km. On two metres, Mark runs 400 watts to a pair of Cushcraft 17B antennas at 27 metres; on 70 cm he runs 130 watts to a pair of eight elements. Tom VK3EU ran eight watts to a 11 element Yagi at five metres. He was able to copy Roger VK5NY but at virtual zero signal strength; at least he tried.

Bob VK3AJN used a QEO6/40 on two metres to a 32 element phased array at 26 metres, and a similar array on 70 cm. These days such antennas are rare but have always been acknowledged as good performers. Years ago I used a 32 element extended expanded phased array with good results on 70 cm from my location in the Adelaide Hills.

On 22/6, from about 1140, Roger left all the good signals and went portable on 10 GHz with a view to contacting Russell VK3ZQB in QF11. However, their efforts were in vain. To compound a number of problems they found the two metre link poor which was unusual in view of the prevailing propagation. To add salt to the wound, on the return journey Roger caught his 13 element two metre link antenna on a tree. The tree survived but not the antenna!

Roger says these various episodes all add up as good experience. So much so, that he warns Lyall VK2ALU the time may come when he will receive a late night call to get on 10 GHz! My spies have mentioned that VK6KZ and VK6BHT have virtually deserted 10 GHz and are now concentrating on 24 GHz, so expect to hear something about that band soon.

The Sydney End

Mike VK2FLR forwarded both a fax and letter with information on how Sydney saw the opening of 20/6, detailed above. He writes, Fred VK2YZU at Peake Hill alerted me about 0900 that the VK5VF beacon had been audible since 0400 and that he had just worked VK5NY. VK5VF not audible in Sydney but VK2ZAB and

VK2DXE were working. Gordon reported working VK5NY at 0930 5X2.

I could hear Fred VK2YZU working VK5NY on 144, complete with a couple of loud meteor pings from Roger. I contacted Fred who said he and Mark VK2EMA at Tottenham had worked VK5NY, VK5LP and VK5AKK on two metres, and that VK2EMA had worked Roger on 70 cm.

Shortly afterwards Chas VK3BRZ came on the 3695 KHz VHF net as did Roger, and Chris VK1DO. Roger then worked Chris on 144.200, and reported hearing consistent CW from me, while I could hear weak SSB from him when he was working Canberra. Roger and Chris tried 70 cm — successfully, I understand, (not so ... 5LP), — he also worked VK1BG on 70 cm. My CW was still audible at VK5NY so we moved to SSB and exchanged 5x1 and 5x2 reports at 1145. Other VK5 stations were on frequency but none were detectable and none could hear my CW except for meteor pings. Then VK2EMA advised he was hearing VK5VF on 70 cm.

I gave it away for the night, however Roger and I tested the path the following morning but the propagation had gone. It started to rain an hour later.

An interesting aspect of this large opening was that almost all contacts were made over land, the exceptions being VK5NY to VK7XR and contacts made by VK5ACY, which had a small sea component. The second map shows a footprint of the area involved.

Mike VK2FLR also reports that, East coast aircraft enhancements contacts continue, and these now include Bob VK3AJN at Wangaratta, who, despite relatively low power, can be worked by most of the more active Sydney stations. VK3ELV, VK3XRS and VK3AUU have been recent contacts. A new-comer from Canberra is VK1PK/1 who operates portable with 2.5 watts to a three element beam: just shows what can be done.

On the EME front, the European window coincides with early evening in eastern Australia, limiting EME opportunities for those who live in densely populated areas, hence I have operated on non-activity weekends when I can avoid prime TV times. I have worked S51LM, L22US, IK5UBM, DL5MAE, DLGP, IK2DDR and W2CRS in recent months, plus one-ways with W9QXP, SM6CMU and DL3BWW, which should be completed in July.

In May, I arranged two metre meteor scatter skeds with VK8GF in Alice Springs to coincide with the eta-Aquarids shower, one of the best in the southern hemisphere for 144 MHz. A couple of pings and bursts were heard both ways on the two mornings we tried, but it seems the 2100 km between us is just too far. Our only other

opportunity to work VK8 is via rare Es openings.

The VK5VF beacon is audible in Sydney via meteors, and I expect the Sydney beacon on 144.4196 MHz can be heard in Adelaide the same way — does anyone listen? The next shower period is the delta-Aquarids in July which has always been good for six metres, although less suitable for two metres as the meteor velocity is fairly low.

The Perseids are inaudible in Australia as they are too far north, however, we get a reasonable shot at the Orionids in October and the Geminids in December. During the peak of the Geminids last year, I was recording up to 80 bursts per hour from VK5VF on 144.450, so there is no excuse for not having a contact! Thanks for the news Mike.

A letter from Peter VK4APG responds to my request for information re tropo openings, particularly to New Zealand and other far points, and this will eventually find its way to Emil W3EP.

Peter has journeyed to the UK to be part of the celebrations of 100 Years of Radio in 1995 by establishing for a week, a six metre station at The Lizard, Cornwall, UK, IN79. He will be as close as he can get to Marconi's Poldhu Point trans-Atlantic Station. IN79 has only a small part of England in it, so it becomes a rather rare grid square, if there is such a thing as a rare grid square in Europe!

He is taking a TS60s, AC psu, five el K6STI Yagi, two el delta quad, 1/4 wave whip with mag mount, 55 feet 213 coax plus the incidental bits and pieces. Peter has worked out that there will be no room for clothes, and all the heavy bits and pieces will be in his wife's luggage, so she pays the excess baggage bill! He is hoping for a bumper northern Es season to overcome the F2 withdrawal symptoms he's suffering during the bottom of the sunspot cycle. A report of the UK activities will be sent to me if there is worthwhile propagation. Thanks Peter.

News from Europe

Ted Collins G4UPS sends his report for May 1995. Six metre stations which will be operational during their summer include IK0FVC from the Vatican City, JN61FV; San Marino will be represented by the Club station T70A, operating with a permit for CW and SSB until December 1995, no private activity permitted; Madeira will have CT3FT; Canary Island with EH8BPX, IL18SK, who had his first QSOs to the UK on 21/5. He is on a different island from EH8ACW so a new grid square; Market Reef — Ted worked OJ0/OH8AA on 27/5 in JP90NH, presumed to be a DXpedition.

The Es season in Europe appears to have had a good start, with openings on

almost every day in May (equivalent to our November), with 20/5, 21/5, 27/5, 28/5 and 30/5 being wide open.

Countries worked/heard for May: 4N1, 4Z4, 5B4, 9A3, 9H5, CN, CT0, CU3, DL, EH, ES, EU, F, G, GJ, GM, GW, HB9, I, IS0, LA, LX, OD, OE, OH, OK, OM, OZ, PA, S51, SM, SP, SV, YL, YT, YU, ZB2. A total of 37 countries for one month — that should satisfy most operators! Many stations were worked in Italy, Yugoslavia and Poland, indicating good Es distances from Ted. A total of 22 beacons were heard.

From the USA

Emil W3EP reports in his *The World Above 50 MHz* in QST, that long-time Six Metre International Radio Klub secretary-treasurer Ray Clark K5ZMS is stepping down due to other commitments. Pat Rose W5OZI will assume his position. SMIRK will continue to sponsor the SMIRK 6-metre contest. There are no plans to revive the newsletter, dormant since 1991.

Closure

Apart from the small openings on 22/6 and 23/6, six metres has been quiet, which is normal for winter. Most activity occurs on 144 MHz and above, while operators spend time building or upgrading equipment.

Closing with two thoughts for the month:

1. The most beaten paths are certainly the most sure; but don't expect to scare up much game on them, and
2. The chief value of money lies in the fact that one lives in a world in which it is over-estimated.

73 from The Voice by the Lake

Late Item

After completing these notes, ready for placing on disk and posting, a further two metre opening has occurred. On 5/7 Roger VK5NY phoned to say the band was open again to central NSW. At 0030 I worked Mark VK2EMA on 2 m 5x2, and 70 cm also 5x2. Fred VK2YZU on 2 m was 5x2 with signal strength improving. I worked VK2EMA again at 0104 with signals to 5x5. Roger VK5NY was also working the stations.

The good conditions continued into the night, but later than previously. Again, I was on the edge of the system, but this time unable to work anyone. Roger VK5NY, at 0856 worked Mark VK2EME on 2 m 5x2-6, then again at 1324 5x3-6, 1343

VK2BIT at Wollongong 5x2/5x1, briefly heard VK2FLR, and VK2ZAB or VK2ZRU, but signals were too marginal for correct ident. At 1406 VK2FLR 5x2-1 on 2 m, 1328 VK2EMA 5x4-4 on 2 m, then 70 cm 4x1/5x3. VK5RO could hear VK2EMA but unable to make contact.

Earlier in the evening, Barry VK5KXC at Gawler worked VK2EMA, VK2BIT, VK2FLR and possibly VK2YZU. VK2BIT is situated on top of the escarpment at Wollongong, 350 m asl and runs 150 watts to a 20 el phased array, so he should be available quite often.

So there it is, another large high pressure system is enveloping the continent, so more good conditions could be on the way. If this system is as good as the last one, it will be a very unusual occurrence for the time of year. The beacons VK3RGL and VK7RNW were just audible. Mark VK2EMA said he received early notice of the opening when he heard the VK5VF beacon on 144.450.

This beacon is so well sited at about 750 m asl, and reliable, that it must be one

of the better beacons in Australia, responsible for alerting many operators on countless occasions. It sits about midway between Perth and Sydney, and services a vast area with its ten watts and omni-directional antenna. The beacon's usefulness and reliability over the past 30 years is unlikely to be matched by any other, may it continue!

From the VK5 viewpoint, we are disappointed that there are no comparable beacons anywhere for which we may listen, so we need to rely on others to advise that they are hearing the VK5 beacon.

There also appears to be emerging evidence that there exists aircraft enhancement of signals between VK5NY and VK2EMA, the effect having been noted later in the evening, probably Asian flights from Sydney. Attempts to work VK2ZAB via that medium have so far been unsuccessful.

*PO Box 169, Meningie SA 5264

Fax: (085) 751 043

Packet: VK5LP@VK5WI, #AOL: #SA.AUS.OCC

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What's New

Bob Tait VK3UI introduces new products of interest to radio amateurs.*

Two Year Warranty

Bob Wiley, National Sales and Marketing Manager for ICOM (Australia) advises that ICOM are pleased to announce that, beginning 1 July 1995, a two year warranty period has been introduced to cover all transceivers, receivers and serial numbered items. Other accessories still have a twelve month warranty period.

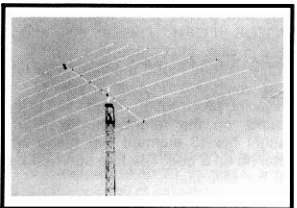
Australian Amateur Packet Radio Association

We have been advised of the formation of the Australian Amateur Packet Radio Association, which is a non-profit group providing assistance to individuals and clubs who wish to set up and operate packet systems and digipeaters.

The association currently has 300 members, most of whom are members of the Wireless Institute of Australia. The association imports and sells packet equipment to members at reasonable rates. They also produce modem kits for those who want to roll their own equipment.

If you require further information about the AAPRA they can be contacted by writing to the Acting Secretary, Geoff Page VK2BQ, 59 Westbrook Avenue, Wahoonga, NSW 2076.

Cushcraft Skylog ASL-2010 Log Periodic Antenna



The new Cushcraft ASL-2010 is the answer for those amateurs who would like a single antenna to cover 20 to 10 metres. It uses a single feedline and balun, no band switching is necessary and it has no traps to increase wind loading.

The total area is just 10.1 sq ft and the boom length is 5.48 metres (18 ft) long. There are eight elements, the longest being 11.58 metres (38 ft) long. The gain is quoted as being 6.4 dBd.

The local supplier is Daycom Communications Pty Ltd, 37 Fenton St, Huntingdale, VIC 3166. Phone (03) 9543 6444.

*C/O PO Box 2175, Caulfield Junction VIC 3161

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**Amateur Radio
helping our community.**

■ Book Review

Disaster Management

Senate Standing Committee on Industry, Science, Technology, Transport, Communications and Infrastructure. June 1994

Reviewed by Gil Sones VK3AUJ

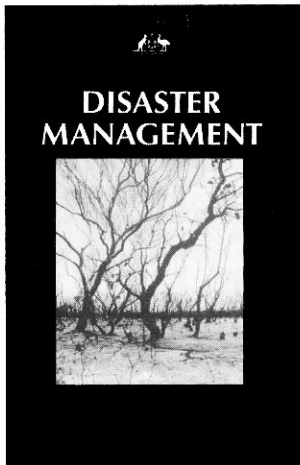
This report is available from the Commonwealth Bookshop. It is of interest to radio amateurs, and members of WICEN in particular, because of the favourable mention of WICEN and its role. This is in part due to the excellent job done by Leigh Baker VK3TP who, as Federal WICEN Coordinator, presented a paper to the Senate Standing Committee and was in turn questioned by the Committee.

The WICEN submission was received favourably and WICEN receives a favourable mention in the report. This is both recognition of the value placed on WICEN and sets in place a very high standard for us to live up to.

In 1993 the Senate Standing Committee on Industry, Science, Technology, Transport, Communications and Infrastructure advertised the terms of reference and

invited submissions. The Terms of Reference were "The capacity of public sector authorities to plan for, forecast and respond to major disasters and large scale emergencies, fully respecting and utilising the skills and capacities of volunteer organisations." In response to this advertisement, Leigh Baker VK3TP, as Federal WICEN Coordinator, made a submission and appeared before the committee on 14 July 1993.

As a result of all the submissions, the committee has published its findings and made recommendations. These are contained in the book which is of interest to radio amateurs. One of the recommendations was that a representative of WICEN be invited to join the National Communications Advisory Group which provides communications



advice to Emergency Management and thus to the Government of Australia. This invitation has been made and Leigh Baker VK3TP has accepted the position.

The book is interesting if rather tough reading. It has significance to radio amateurs as an example of meeting Government Agencies on their ground and on their terms and doing so successfully.

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■ Poetry

Deceased Estate

(with apologies to
Percy Bysshe Shelley)

Bob Hawksley VK2GRY*

I met a fellow at a garage sale
Who said "Two masts and yards of cable lie
Right out the back. And near them, on a stand,
You'll find equipment piled though what it is
Or was, I cannot say. Here lived a ham,
So called, who radioed across the world
To speak with thousands whom he never met
Nor ever will for now he's gone. And all
That's left is lying here on sale today.

What deeds or feats he claimed are lost in time
His triumphs, yes, and conquests too are shrunk
To being but a tag tied quickly on
His silent key, his muted phones, his gear,
All bleakly labelled now Deceased Estate."

*21 Wallumatta Road, Newport NSW 2106

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Continued from page 1

the Directors of Region 3 asked the IARU Vice President, Michael Owen VK3KI, to make the presentation on their behalf.

The cover photograph, taken by Peter Jensen VK2AQJ, shows Michael (left) making the presentation to David at the WIA Annual Dinner on 20 April 1995 in Melbourne.

In making the presentation, Michael thanked David for his valuable contribution to the Region. He also described how the IARU had responded to the restructuring of the International Telecommunications Union in 1993, which had required the ongoing involvement of experts representing the amateur service in ITU activities. David was one of a pool of experts from all around the world, and has attended a number of ITU meetings representing the IARU. He also thanked David for that contribution, not only to date, but for the future.

David responded, thanking the Directors and stressing the importance of the ongoing involvement of the IARU in the ITU.

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HF PREDICTIONS

Evan Jarman VK3ANI

The Tables Explained

The tables provide estimates of signal strength for each hour of the UTC day for five of the bands between 7 and 28 MHz. The UTC hour is the first column; the second column lists the predicted MUF (maximum useable frequency); the third column the signal strength in dB relative to 1 μ V (dBu) at the MUF; the fourth column lists the "frequency of optimum travel" (FOT), or the optimum working frequency as it is more generally known.

The signal strengths are all shown in dB relative to a reference of 1 μ V in 50 ohms at the receiver antenna input. The table below relates these figures to the amateur S-point "standard" where S9 is 50 μ V at the receiver's input and the S-meter scale is 6 dB per S-point.

μ V in 50 ohms	S-points	dB(μ V)
50.00	S9	34
25.00	S8	28
12.50	S7	22
6.25	S6	16
3.12	S5	10
1.56	S4	4

0.78	S3	-2
0.39	S2	-8
0.20	S1	-14

The tables are generated by the GRAPH-DX program from FT Promotions, assuming 100 W transmitter power output, modest beam antennas (eg three element Yagi or cubical quad) and a short-term forecast of the sunspot number. Actual solar and geomagnetic activity will affect results observed.

The three regions cover stations within the following areas:

VK EAST The major part of NSW and Queensland.

VK SOUTH Northern-NSW, VK3, VK5 and VK7.

VK WEST The south-west of Western Australia.

Likewise, the overseas terminals cover substantial regions (eg "Europe" covers most of Western Europe and the UK).

The sunspot number used in these calculations is 16.1. The predicted value for September is 14.4.

VK SOUTH — SOUTH PACIFIC

UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9
1	15.1	15	11.4	3	17	5	-8	-27
2	15.6	15	11.7	4	18	5	-5	-24
3	15.6	16	11.7	7	19	8	-5	-24
4	15.6	17	11.7	13	21	8	-5	-24
5	14.9	18	11.3	22	21	6	-9	-31
6	13.2	23	10.0	37	18	-2	-22	...
7	11.7	26	8.9	41	12	-13	-38	...
8	10.3	28	7.7	41	3	-28	...	...
9	9.2	30	6.9	40	-6	...	...	...
10	8.9	32	6.6	39	-15	...	...	...
11	7.8	32	5.8	37	-24	...	...	...
12	7.5	32	5.6	35	-28	...	...	...
13	7.3	33	5.4	34	-32	...	...	...
14	7.2	33	5.3	33	-33	...	...	...
15	7.2	33	5.3	34	-32	...	...	...
16	6.3	34	4.9	29	...	...	...	...
17	6.5	34	5.0	30	...	...	...	...
18	6.8	33	5.1	30	...	...	...	...
19	6.9	32	5.3	30	...	...	...	...
20	8.2	23	6.4	25	-17	...	...	...
21	10.5	19	8.1	20	-2	-24	...	...
22	12.5	16	9.6	12	11	-7	-26	...
23	13.8	15	10.6	7	14	0	-15	-38
24	17.4	15	11.1	4	16	4	-10	-31

VK WEST — SOUTH PACIFIC

UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9
1	17.9	12	13.6	-21	16	11	4	-8
2	14.8	12	13.2	-21	16	12	6	-6
3	19.0	12	14.8	-21	17	14	7	-4
4	19.1	13	14.3	-16	19	15	7	-4
5	19.1	14	14.3	-6	21	16	8	-3
6	16.8	16	13.1	11	24	19	6	-8
7	15.7	20	11.9	28	25	12	-1	-20
8	13.9	24	10.4	39	23	5	-11	-34
9	12.1	27	9.4	41	17	-15	-25	...
10	12.8	29	10.0	42	11	-15	-38	...
11	9.8	31	7.3	42	5	-24	...	...
12	9.4	31	7.0	41	2	-29	...	...
13	9.1	32	6.7	40	0	-33	...	...
14	8.8	32	6.5	39	-5	-37	...	...
15	8.7	32	6.5	39	-3	-38	...	...
16	8.7	32	6.6	40	-3	-37	...	...
17	7.7	34	5.9	37	-13	...	...	...
18	7.3	33	5.7	37	-11	...	...	...
19	8.0	32	6.1	37	-10	...	...	...
20	8.3	24	6.4	26	-7	...	...	...
21	10.0	19	7.7	18	3	-20	...	...
22	12.6	16	9.9	5	13	-1	-17	-39
23	15.4	13	11.8	-8	15	7	-4	-20
24	17.0	12	12.8	-17	16	10	-1	-12

VK EAST — AFRICA

UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9
1	8.4	9	6.5	4	-4	-28	...	...
2	7.1	2	6.5	-2	-10	-37	...	...
3	7.3	-8	5.6	-10	-8	-31	...	...
4	10.0	-1	7.8	-24	0	-12	-27	...
5	14.2	5	11.0	...	5	4	-7	-21
6	16.4	6	12.9	...	5	4	-2	-13
7	16.2	6	12.1	...	5	4	-2	-13
8	14.6	6	10.9	-26	6	1	-6	-20
9	12.7	6	9.5	-26	6	-3	-14	-32
10	11.0	5	8.2	-17	3	-9	-24	...
11	9.6	6	7.1	-6	0	-18	-37	...
12	8.7	8	6.5	2	-3	-26	...	...
13	8.4	14	6.2	-2	-5	-32	...	...
14	8.2	21	6.0	22	7	-39	...	...
15	8.1	25	5.9	27	-9	...	...	...
16	8.2	28	6.0	31	-8	...	...	...
17	8.0	30	6.1	33	-10	...	...	...
18	7.8	30	6.3	33	-13	...	...	...
19	7.4	31	5.6	32	-16	...	...	...
20	7.7	30	5.8	33	-14	...	...	...
21	7.7	30	5.9	33	-14	...	...	...
22	7.4	29	5.8	30	-16	...	...	...
23	7.1	19	5.6	19	-18	...	...	...
24	7.5	14	5.9	14	-13	...	...	...

VK SOUTH — AFRICA

UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9
1	7.7	16	5.9	16	-9	...	...	...
2	7.1	16	6.1	8	-7	-34	...	...
3	10.7	12	7.9	0	5	-11	-29	...
4	15.0	12	11.6	-15	12	5	-4	-19
5	16.6	9	13.5	-32	10	7	0	-12
6	17.4	8	14.1	-1	9	1	-9	...
7	17.0	8	13.6	...	9	6	0	-1
8	16.0	8	12.8	-34	9	5	-2	-15
9	14.6	8	11.5	-25	9	2	-7	-23
10	12.8	9	10.0	-15	7	-3	-16	-36
11	11.0	9	8.6	-6	4	-11	-28	...
12	9.6	11	7.5	4	0	-21	...	...
13	8.6	15	6.7	13	-5	-33	...	...
14	8.1	21	6.2	23	-10	...	...	...
15	7.9	25	6.0	27	-13	...	...	...
16	7.7	28	5.9	30	-15	...	...	...
17	7.7	29	5.9	32	-16	...	...	...
18	7.6	30	5.9	35	-17	...	...	...
19	7.5	30	5.8	32	-18	...	...	...
20	7.4	30	5.8	31	-20	...	...	...
21	7.2	29	6.2	33	-14	...	...	...
22	7.9	30	6.1	33	-13	...	...	...
23	7.6	29	5.9	31	-16	...	...	...
24	8.0	23	6.3	24	-10	...	...	...

VK WEST — AFRICA

UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9
1	7.1	23	5.6	23	-18	...	...	...
2	7.3	23	5.8	14	-14	...	...	...
3	10.1	13	7.6	4	3	-16	-37	...
4	14.5	12	11.2	-12	12	3	-7	-24
5	16.8	10	13.8	-37	11	8	2	-9
6	17.9	9	13.4	-39	10	8	2	-9
7	17.8	8	13.4	...	9	8	2	-9
8	17.4	8	13.0	...	9	7	0	-11
9	16.4	10	12.3	-37	9	5	-2	-15
10	14.7	9	11.1	-24	9	2	-7	-23
11	12.8	10	9.6	-10	8	-3	-17	-37
12	11.1	12	8.3	1	5	-11	-30	...
13	9.6	16	7.2	13	0	-23	...	...
14	8.8	21	6.5	23	-4	-34	...	...
15	8.5	26	6.3	29	-7	...	...	...
16	8.2	28	6.1	32	-9	...	...	...
17	8.0	30	6.1	34	-10	...	...	...
18	8.2	31	6.1	36	-9	...	...	...
19	8.2	31	6.2	36	-9	...	...	...
20	7.9	31	6.0	35	-12	...	...	...
21	7.9	31	6.0	35	-12	...	...	...
22	7.8	31	6.0	35	-14	...	...	...
23	8.3	31	6.3	36	-7	...	...	...
24	7.7	31	5.9	34	-14	...	...	...

VK EAST — ASIA

UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9
1	20.2	12	15.4	-37	26	15	11	2
2	20.7	12	15.8	-39	15	15	11	2
3	20.9	12	15.9	...	15	16	11	3
4	21.1	12	16.1	-38	16	16	12	4
5	21.1	13	16.1	-33	16	17	12	4
6	20.2	13	15.5	-24	19	17	11	1
7	18.7	14	14.3	-9	21	16	8	-4
8	17.0	17	12.9	13	23	13	-2	-13
9	15.2	20	11.7	27	15	9	-6	-27
10	13.5	23	10.3	41	20	0	-20	...
11	12.4	24	9.5	43	15	-9	-31	...
12	11.8	25	9.0	44	11	-15	...	...
13	11.1	26	8.3	43	6	-24	...	...
14	10.3	26	7.9	41	0	-33	...	...
15	9.9	26	7.5	40	-4	-39	...	...
16	9.8	26	7.5	40	-5	...	...	...
17	9.7	27	7.6	41	-11	...	...	...
18	7.4	28	5.7	31	-39	...	...	...
19	7.6	28	5.9	31	-36	...	...	...
20	8.3	28	6.4	35	-23	...	...	...
21	12.2	22	9.4	-32	17	-11	-14	-36
22	17.8	16	13.8	1	22	15	6	-7
23	19.6	14	15.1	-16	20	17	10	0
24	20.0	13	15.3	-27	18	16	10	0

VK SOUTH — ASIA

UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9
1	16.4	9	12.5	-35	11	7	-1	-14
2	16.8	9	12.7	...	10	7	0	-12
3	17.3	9	13.0	...	10	8	2	-9
4	17.3	9	13.0	...	10	8	2	-9
5	17.5	10	13.0	-38	11	9	2	-9
6	16.9	11	12.8	-30	13	9	1	-11
7	16.0	12	12.1	-17	14	8	-2	-16
8	14.4	15	10.9	5	15	3	-10	-30
9	12.6	20	9.5	30	13	-7	-27	...
10	11.0	22	8.3	35	5	-23	...	...
11	9.6	24	7.2	35	-8	...	...	...
12	8.8	25	6.6	34	-18	...	...	...
13	8.5	26	6.4	34	-22	...	...	...
14	8.2	26	6.1	33	-27	...	...	...
15	8.0	26	6.0	32	-30	...	...	...
16	7.8	26	6.1	32	-30	...	...	...
17	8.2	26	6.2	33	-28	...	...	...
18	7.7	26	5.9	30	-35	...	...	...
19	7.0	26	5.4	26	...	...	...	...
20	6.9	26	5.4	25	...	...	...	...
21	6.8	26	5.3	25	-15	...	...	...
22	11.9	13	9.2	6	6	-12	-31	...
23	14.3	11	11.0	-13	11	1	-11	-29
24	15.7	10	12.0	-26	11	5	-4	-18

VK EAST — EUROPE										VK SOUTH — EUROPE										VK WEST — EUROPE										
UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9		UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9		UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9		
1	9.3	-6	7.7	30	-	-	-	-		1	15.8	2	11.1	-	-1.2	18.1	21.2	24.9		1	10.2	15	7.1	8	4	-15	-35	-		
2	9.1	-11	6.6	-37	0	-10	-23	-		2	15.9	5	11.2	-	-1	-1	-	-		2	10.8	6	6.8	-13	1	-15	-32	-		
3	10.1	-11	7.3	-	-	-	-	-		3	16.0	0	11.0	-	-20	-5	-2	-4		3	10.9	0	-	-33	-	-2	-11	-		
4	12.1	-6	8.5	-	-	-	-	-		4	19.2	-7	13.2	-	-31	-10	-4	-2		4	13.3	1	9.1	-	-	2	-1	-8	-22	
5	14.3	-2	10.4	-	-	-	-	-		5	22.7	-4	16.2	-	-	-16	-6	-2		5	16.0	3	11.3	-	-	0	3	-1	-9	
6	15.0	0	11.6	-	-	-	-	-		6	25.1	-1	18.3	-	-	-19	-8	-2		6	17.8	4	12.5	-	-	-1	-1	-2	-4	
7	16.5	2	12.1	-	-	-	-	-		7	26.5	-1	19.3	-	-	-19	-8	-2		7	18.5	4	13.0	-	-	-2	4	-3	-3	
8	17.0	5	12.5	-	-	-	-	-		8	25.2	-1	18.9	-	-	-15	-6	-1		8	19.0	5	13.3	-	-	-2	4	-4	-1	
9	15.6	5	11.9	-	-	-	-	-		9	21.3	-1	17.6	-	-34	-11	-3	0		9	18.0	5	13.7	-	-	0	5	3	-3	
10	13.9	6	10.6	-	-	-	-	-		10	21.0	0	16.0	-	-22	-5	-0	-		10	17.1	5	13.0	-	-	2	4	-10	-8	
11	12.2	7	9.3	-24	6	-2	-14	-33		11	18.5	0	13.9	-	-12	0	1	-2		11	15.2	5	11.5	-	-	5	3	-4	-16	
12	11.2	8	7.5	-10	6	-7	-12	-22		12	16.3	1	12.2	-	-3	2	0	-6		12	13.4	6	10.2	-31	6	0	-11	-27		
13	10.7	12	8.1	0	6	-11	-22	-		13	14.3	4	10.6	-	4	3	-3	-14		13	11.7	13	8.9	-12	6	-6	-21	-		
14	10.0	16	7.6	11	4	-17	-38	-		14	17	7	9.4	-31	7	1	-2	-1		14	10.8	13	8.1	4	5	-13	-32	-		
15	9.5	19	7.1	19	1	-23	-	-		15	11.8	12	8.7	-8	-10	-1	-15	-35		15	10.3	18	7.8	17	4	-18	-	-		
16	8.5	24	7.0	28	0	-30	-	-		16	11.4	19	8.4	-14	12	-3	-20	-		16	9.8	23	7.4	29	2	-25	-	-	-	
17	9.2	27	7.0	33	0	-38	-	-		17	11.0	25	8.2	-29	13	-6	-28	-		17	9.5	25	7.2	32	0	-30	-	-	-	
18	8.3	29	6.5	34	-	-	-	-		18	10	27	7.2	-	-	-	-	-		18	9.4	27	7.1	35	-1	-32	-	-	-	
19	7.4	29	5.7	31	-20	-	-	-		19	10.2	29	7.7	38	10	-14	-37	-		19	9.4	28	7.1	36	-1	-32	-	-	-	
20	7.5	29	5.8	32	-18	5	-	-		20	9.6	30	7.3	39	7	-20	-37	-		20	8.8	28	6.7	35	-7	-	-	-	-	
21	8.6	30	6.6	36	-	-	-	-		21	10	30	7.4	-	-	-	-	-		21	12	28	6.8	-	-	-	-	-	-	
22	9.0	22	6.8	23	0	-26	-	-		22	13.7	27	10.6	41	25	-9	-6	-26		22	8.0	28	6.2	32	-15	-	-	-	-	
23	10.3	12	7.3	0	-	-	-	-		23	17.6	21	12.1	6	26	20	13	1		23	8.2	29	6.3	33	-11	-	-	-	-	
24	9.7	1	6.9	-18	1	-12	-28	-		24	16.8	13	11.7	-	12	12	8	-1		24	8.5	25	6.5	29	-8	-	-	-	-	

VK EAST — EUROPE (long path)										VK SOUTH — EUROPE (long path)										VK WEST — EUROPE (long path)										
UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9		UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9		UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9		
1	11.3	1	7.6	-7	8	-3	-16	-36		1	10.6	7	7.3	-12	5	-7	-21	-		1	10.2	-3	7.2	-30	0	-9	-21	-		
2	10.6	13	7.2	1	7	-6	-22	-		2	9.9	10	6.9	0	-	-4	-12	-29		2	9.6	0	7.7	-18	0	-13	-28	-		
3	9.5	15	6.8	16	5	-14	-35	-		3	9.3	14	6.5	8	2	-18	-38	-		3	9.0	2	6.4	-9	-1	-18	-35	-		
4	12.1	-6	8.5	-	-	-	-	-		4	9	16	6.4	24	1	-23	-4	-		4	8.5	9	6.3	-2	-2	-2	-	-		
5	14.3	-2	10.4	-	-	-	-	-		5	9.0	23	6.4	25	1	-25	-	-		5	8.8	9	6.3	3	-2	-23	-	-		
6	15.0	0	11.6	-	-	-	-	-		6	10.0	24	7.1	28	15	-15	-37	-		6	9.8	12	7.0	6	2	-16	-34	-		
7	16.5	2	12.1	-	-	-	-	-		7	11.7	22	8.4	26	15	-2	-19	-		7	11.4	15	8.2	8	8	-6	-22	-		
8	17.0	5	12.5	-	-	-	-	-		8	11.9	25	8.6	18	9	-8	-20	-		8	10.2	15	8.3	-9	6	-4	-21	-		
9	15.6	5	11.9	-	-	-	-	-		9	9.7	13	7.5	7	2	-17	-38	-		9	12.7	13	10.4	3	10	-2	-15	-28		
10	13.9	6	10.6	-	-	-	-	-		10	8.0	3	6.1	-2	-4	-25	-	-		10	11.0	8	8.5	-5	4	-10	-25	-		
11	12.2	7	9.3	-24	6	-7	-12	-22		11	8.6	-2	6.3	-1	-3	-20	-	-		11	9.0	1	8.9	-14	-1	-16	-32	-		
12	11.2	8	7.5	-10	6	-11	-22	-		12	8.0	-8	6.2	-18	-2	-18	-35	-		12	12	8.3	-9	6	-4	-21	-3	-		
13	10.7	12	8.1	0	6	-9	-22	-		13	7.9	-15	6.2	-25	-2	-15	-30	-		13	8.2	-14	6.3	-27	-3	-16	-31	-		
14	10.0	16	7.6	11	4	-17	-38	-		14	7.9	-32	6.1	-	-	-10	-32	-38		14	8.0	-28	6.0	-	-	-8	-20	-35		
15	9.5	19	7.1	19	1	-23	-	-		15	7.9	-32	6.1	-	-	-	-	-		15	7.8	-	6.1	-	-	-18	-30	-		
16	8.5	24	7.0	28	0	-30	-	-		16	7.7	-	6.0	-	-	-25	-37	-		16	7.8	-	6.0	-	-	-24	-30	-		
17	9.2	27	7.0	33	0	-38	-	-		17	7.4	-	5.8	-	-	-34	-	-		17	7.8	-	6.0	-	-	-29	-39	-		
18	8.3	29	6.5	34	-	-	-	-		18	7.8	-	6.0	-	-	-30	-	-		18	7.6	-	5.9	-	-	-34	-	-		
19	7.4	29	5.7	31	-20	-	-	-		19	7.4	-	5.8	-	-	-38	-	-		19	7.7	-	6.0	-	-	-37	-38	-		
20	7.5	29	5.8	32	-18	5	-	-		20	11.3	-10	6.2	-	-13	-19	-30	-		20	7.7	-	6.1	-	-	-31	-	-		
21	8.6	30	6.6	36	-	-	-	-		21	13.5	-3	10.2	-	-2	-1	-6	-16		21	9.0	-35	6.7	-	-	-12	-18	-30		
22	9.0	22	6.8	23	0	-26	-	-		22	13.2	-1	9.3	-	0	-5	-16	-		22	11.1	-11	9.0	-	-	-3	-6	-13	-26	
23	10.3	12	7.3	0	-	-	-	-		23	12	7	11	-1	-1	-9	-21	-		23	10.8	-13	8.3	-	-	-2	-17	-37	-	
24	9.7	1	6.9	-18	1	-12	-28	-		24	11.3	3	7.8	-27	4	-4	-15	-32		24	10.9	-6	7.6	-	-	-1	-6	-16	-32	

VK EAST — MEDITERRANEAN										VK SOUTH — MEDITERRANEAN										VK WEST — MEDITERRANEAN										
UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9		UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9		UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9		
1	9.7	0	7.4	23	1	-11	-27	-39		1	9.6	7	7.7	-6	2	-15	-34	-		1	9.5	15	6.8	13	3	-25	-	-		
2	10.4	4	10.3	-	-	-	-	-		2	10.0	2	7.7	-2	2	-10	-34	-		2	9.2	15	6.5	12	3	-22	-	-		
3	13.9	1	11.7	-	-	-	-	-		3	13.8	3	10.9	-	-	4	1	-6	-19		3	12.7	5	10.0	-31	5	-2	-14	-31	
4	18.1	5	13.7	-	-	-	-	-		4	18.4	6	14.0	-	-	1	6	4	-4		4	16.7	6	12.7	-	-	5	5	0	-10
5	20.6	5	15.6	-	-	-	-	-		5	19.3	5	14.4	-	-	-1	5	4	-1		5	18.2	6	14.2	-	-	5	6	2	-6
6	22.5	5	15.5	-	-	-	-	-		6	19.2	5	14.4	-	-	-2	4	-2		6	18.3	6	14.2	-	-	5	6	2	-6	
7	19.4	5	14.7	-	-	-	-	-		7	18.8	4	14.1	-	-	-1	4	-3												

HAMADS

TRADE ADS

● **AMIDON FERROMAGNETIC CORES:** For all RF applications. Send business size SASE for data/price to RJ & US Imports, PO Box 431, Kiama NSW 2533 (no enquiries at office please ... 14 Boany Ave Kiama). Agencies at: Geoff Wood Electronics, Sydney; Webb Electronics, Albany; Assoc TV Service, Hobart; Truscotts Electronic World, Melbourne and Mildura; Alpha Tango Products, Perth.

● **WEATHER FAX programs for IBM XT/ATs** *** "RADFAX2" \$35.00, is a high resolution shortwave weatherfax, Morse and RTTY receiving program. Suitable for CGA, EGA, VGA and Hercules cards (state which). Needs SSB HF radio and RADFAX decoder. *** "SATFAX" \$45.00, is a NOAA, Meteor and GMS weather satellite picture receiving program. Needs EGA or VGA & WEATHER FAX PC card, + 137 MHz Receiver. *** "MAXISAT" \$75.00 is similar to SATFAX but needs 2 MB of expanded memory (EMS 3.6 or 4.0) and 1024 x 768 SVGA card. All programs are on 5.25" or 3.5" disks (state which) plus documentation, add \$3.00 postage. ONLY from M Delahunt, 42 Villiers St, New Farm QLD 4005. Ph (07) 358 2785.

● **HAM LOG v3.1** — Acclaimed internationally as the best IBM logging program. Review samples... AR: "Recommend it to anyone"; The Canadian Amateur: "Beyond this reviewer's ability to do it justice. I cannot find anything to improve on. A breakthrough of computer technology". ARA: "Brilliant". Simple to use with full help, the professional HAM LOG is immensely popular (now in its 5th year), with many useful, superb features. Just \$59 (+\$5 P & P), with a 90 page manual. Special 5 hour Internet offer. Demos, brochures available. Robin Gandevia VK2VN (02) 369 2008 BH fax (02) 369 3069. Internet address rhg@ozemail.com.au.

FOR SALE NSW

● **TOWER HILLS** winch-up cyclonic galvanised 13 m. Rotator Kenpro KR1000, antenna Tet-Emtron TE46 6 band with coax, installed 2 years, sell \$1,500. Rod VK2BRN ex VK4FRW (0755) 24 3722 Tweed Heads.

● **3 METRE "Hero"** KU band mesh dish inclined orbit polar mount 3" pipe mount \$1,250; 2 CHAPARRAL "Sidekick" II 20 degrees k 4 GHz LNB's \$240ea. John VK2VWV QTHR (02) 546 1927.

● **YAESU FT757GX s/n 4J121004** with mobile mount, manual and mic, vgc, \$950; YAESU FRG7700 comms rcvr 150 kHz — 30 MHz with memory module, manual, vgc, \$490. Tibi VK2COD (047) 51 4398 or fax (047) 51 6294 LAO.

● **DECEASED ESTATE.** YAESU FT-411 complete with extra battery & PA-6 car

adaptor/charger s/n 9H120549; YAESU FT-230R s/n 4C220340; YAESU FT-101Z s/n 9H090667; YAESU FRG-7 Communication receiver s/n 269M-2700. All equipment to be sold by tender. Please forward offer to WIA NSW Division, PO Box 1066, Parramatta NSW 2124 or fax (02) 626 6066. Enquiries to Michael VK2YC (02) 626 9288.

● **VALVES** new boxed QV06/40, \$20 ea; QV03/20, \$15 ea; QY3/125, \$25 ea; EIMAC Y799 contact cooled, sim to 4CX250B, \$100 pair. Dave VK2GLO, 10 Manus Pl, Glenfield NSW 2167 or (02) 605 1341.

FOR SALE VIC

● **KENWOOD TS-930S HF TRANSCEIVER**, 160 — 10 m, inbuilt auto ATU, professionally modified to include Fox Tango narrow SSB dual filters and switching, additional 8 memories, memory scanning, etc. Complete with mic, users manual and workshop manual. As new condition, \$1745. KENWOOD SP-930 speaker with selectable frequency response, EC, \$145. KENWOOD TS-50S HF TRANSCEIVER, 160 — 10 m, matching auto ATU, professionally modified to include high stability TXCO, IRL narrow SSB filter (switchable) and IRL RFI speech processor. Complete with matching mic, user manuals and workshop manual. Little used, immaculate condition, original cartons, \$2345. YAESU FT7 HF TRANSCEIVER, 80 — 10 m, complete with mic and handbook, original carton. Very clean, excellent performer, \$375. Bill Roper VK3BR, QTHR, (03)9584 9512.

● **COMMAND RECEIVER BC-453-B** 190-550 kHz, Command Receiver BC-454-B 3-6 MHz, CQ Command Sets handbook, \$30 the lot, will not split; PALEC VCT-3 valve circuit tester complete with handbooks, \$200. Allen VKGSM QTHR (03) 9386 4406.

● **FM92 PHILIPS** remote control, converted to 70 cm, \$300; AWA RT85 remote control converted 70 cm, 25-30 watts, \$300; ANDREWS spun aluminium 6" satellite dish, \$350; SEVERAL lengths 1 5/8" Andrews waveguide, offer. Graeme (053) 36 1520 or (015) 56 8492.

● **VARIOUS** (25 pieces) "Polar" BB/SP and other tuning caps; RS232 Flopt link; various (10 pieces) xfmrs 50 VA — 2 kVA, some as new; 1 x ALU QD — hub/spider, \$100 the lot; EDDYSTONE S770-RMK Rx, 19-165 MHz in 6 bands, etc, offers invited. Hartmut VK3DYD QTHR (03) 9555 6714.

● **FM747s** 400-500 MHz, ideal 70 cm rig, \$20 ea; FM828s LB, easy conv to 6 m, \$50 ea; PHILIPS regulated power supply 5 A 13.8 V, inbuilt speaker, \$50; TAIT 5 A 13.8 V regulated supply, \$70. T Bartel VK3ZOT, 71 Stephen Ave, Montrose Vic 3765.

● **HY-GAIN QUAD** tri-band, manual, single coax feed, light weight aluminium constrn, 8"

boom, diamond config, driven element at DC ground, no rain static, vg working condn, assembled, \$300. Jack VK3SP (03) 9842 1841.

● **YAESU FT-107M, FTV-107** transverter, FC-107 Tuner, FV-107 ext VFO, SP-107 speaker, complete 160 m — 70 cm transceiver with manuals, boxes, DMS unit and modules, \$1,500. Tony VK3TZ QTHR (03) 9887 2917.

● **YAESU FT-101E, YD148** desk mic, DC/DC converter, fan, manuals, speech processor, \$550; ICOM IC-211 2 m all mode base station, inbuilt PS, \$450; AWA RT80, suit 2 m packet, \$75; TFMIR 2100 V 600 VA, \$25. Lee VK3GK (03) 9544 7368.

● **KENWOOD TS440S/AT** HF transceiver s/n 9110294, top condx, manual, orig carton, \$1,400 ono. Damien VK3CDI (054) 27 3121.

FOR SALE QLD

● **KENWOOD TL922** linear amplifier, 2 1/2 months old, complete \$4,000; KENWOOD TL922 linear amplifier 3 years old, complete \$3,000 ono. Bob VK4RM (074) 49 7151.

● **VALVES** NEW boxed QE010/5763, QEE03/12, 6CB5, 6DQ5, 5842/417A, 12B7Y, 6BQ5, 6KA5, 6CL6, 6BQ7A, 6ES8, 6AN7A, 6M5, 6N8, 6KA5, 6AM6, 6CB6, 6A8G, 6B6G, 1R5, 1S5, 1T4, 3V4 plus numerous others, all \$10 each; 813 new \$30; EIMAC T172/8295A with SK184 socket and chimney, \$250; NEW COAX URM57, any length, \$1.00 per metre, 500 metres, \$350; TRANSMIT gangs 250 pF and 500 pF, 375", new, \$50 ea. John VK4KK QTHR (07) 269 6647.

● **VALVES** For restorers, amateurs, collectors. Octals novels, all tested. Sockets, transmitter ceramics, unused 6146Bs, 12B7Ys, 6K8GTs now available. Reduced prices. Send 9" x 4" sase for list. Ted VK4YG PO Box 245, Ravenshoe Qld 4872 or (070) 97 6387.

● **TENDER**, 60' guyed tower, TH7 DXCC tribander, receivers, HiFi amps, transformers, earphones, microphones, variable fixed capacitors, roller inductors, meters, Morse keys, official radio service manuals. Catalogue 85 cent stamp. Hadgraft, 17 Paxton St, Holland Park Qld 4121 or (07) 397 3751.

FOR SALE SA

● **KENWOOD TL922** linear, TS940S transceiver, mint cond, top of the line performance, the ultimate, selling health below par, price negotiable; AKAI R/R tape recorder Hi-Fi 20,200,000 audio frequency response. A Sheppard VK5DCD, QTHR, (08) 31 4194.

● **ANTENNA** 8 el log periodic for HF bands, 10-30 MHz continuous, with all hardware, instructions, good condition, \$450 plus freight. Offers considered. Paul VK5MAP QTHR (086) 51 2398.

● YAESU FT-411 2 metre handheld, s/n 9D080112, as new in original carton, with charger, FNB-14, PA6 adaptor, ant, and soft case, \$350 ono. John VK5KBE QTHR (08) 250 7259.

● FOUR ELEMENT dual band cubical quad for 10/15 m, \$200 ono or swap for 2 m 100 W amplifier. Rob VK5CS (085) 68 5411 after 7 pm.

WANTED NSW

● KENWOOD TS-711 all mode 2 metre plus at least 60 watt amp. Also MFJ-259 SWR analyser, all items to be as new, books, etc. A Walsh VK2TBW (048) 61 2092.

● LINEAR HF amplifier working or not; CAPACITOR approx 20 mF 4 kV DC. Malcolm VK2BMS QTHR (02) 257 4583 BH or (02) 958 1114 AH.

● CIRCUIT and/or handbook for Heathkit GR-1 receiver. Will repay all costs. Jim VK2IB QTHR (067) 61 5215 after 6 pm weekdays.

● NOISE and distortion meter AWA F240 or similar, any condition. Please advise if workshop manual or circuit available for copy or purchase. A Hinkler VK4AO (066) 46 6587.

WANTED VIC

● IC202 S or E model; also Crystal for 144.6 to 144.8 MHz to suit IC202. Roger VK3XRS PO Box 98, Bairnsdale Vic 3875 or (051) 52 1163.

● KENWOOD TS-711A 2 m Tx. Ian VK3YIC (052) 26 9301 BH or (053) 41 5656 AH.

● GELOSO transmitter G-222-TR, any components which might assist in restoration, such as knobs, switches, etc.; RECEIVER to match Geloso G-222-TR; DOCUMENTATION on Heathkit station monitor, model SB610;

DITTO for a Leader RF signal generator, model LSG11; CIRCUIT/MANUAL/WHATEVER for a Leader LDM810 GDO. Michael Krochmal VK3ZIP/VK3KRO, PO Box 112, Ormond VIC 3204, (03) 9578 9124 AH, (03) 9596 8065 BH, fax (03) 9596 8369, email mike=krochmal@vut.edu.au.

● ANTENNA Highgain MK2-3 or similar tri-band beam on 16'18" foot boom, will pick up VK3, old or in need of service OK if price is right (pensioner). Jim VK3YJ QTHR (03) 9315 9387.

WANTED QLD

● CIRCUIT or info for AMR300 or STC A-679 Rx, also 455 crystal to suit. Ron VK4CRO QTHR (07) 390 7762.

WANTED SA

● SERVICE MANUAL or photocopy for Kenwood TS-440S; POWER lead for Kenwood TS-440S or 130S or similar type radios. Will pay all costs. Paul VK5MAP QTHR (086) 51 2398.

● RECEPTION SET No. 8C (Aust) AWA type C51061, preferably with carrying frame. Also wanted Antenna Rods "B", approximately 12" long by 1/4" diameter. Tony VK5UA QTHR or (08) 269 4095 AH.

MISCELLANEOUS

● THE WIA QSL Collection (now Federal) requires QSLs. All types welcome especially rare DX pictorial cards special issue. Please contact Hon. Curator Ken Matchett VK3TL, 4 Sunrise Hill Road, Montrose Vic 3765, Tel (03) 728 5350.

Editor's Comment

Continued from page 2

6. Necessary Skills

- Working effectively on crowded bands.
- Flexibility and procedure awareness.
- Q code and abbreviations (common to all languages).

7. International Agreements

- IARU Region 3 re-affirmation of ITU policy in 1994. Regions 1 and 2 in 1992, 1993.
- NZART member survey likewise in 1994.
- JARL and 38 other Pacific countries support ITU in June 1994.
- ARRL policy January 1993 to retain Morse.

In conclusion, Col reports the finding of the IARU CW Committee that there should be no change to the present ITU regulations on Morse proficiency unless supported by all three IARU Regions. The WIA, as a long standing member of the IARU, complies with this position.

Bill Rice VK3ABP
Editor
ar

Hamads

Please Note: If you are advertising items For Sale and Wanted please use a separate form for each. Include all details: eg Name, Address, Telephone Number (and STD code), on both forms. Please print copy for your Hamad as clearly as possible.

*Eight lines per issue free to all WIA members, ninth line for name and address. Commercial rates apply for non-members. Please enclose a mailing label from this magazine with your Hamad.

*Deceased Estates: The full Hamad will appear in AR, even if the ad is not fully radio equipment.

*Copy typed or in block letters to PO Box 2175,

Caulfield Junction, Vic 3161, by the deadline as indicated on page 1 of each issue.

*QTHR means address is correct as set out in the WIA current Call Book.

*WIA policy recommends that Hamads include the serial number of all equipment offered for sale.

*Please enclose a self addressed stamped envelope if an acknowledgement is required that the Hamad has been received.

Ordinary Hamads submitted from members who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.

Conditions for commercial advertising are as follows: \$25.00 for four lines, plus \$2.25 per line (or part thereof) Minimum charge — \$25.00 pre-payable.

State:

Not for publication:

☐ Miscellaneous

☐ For Sale

☐ Wanted

Name: Call Sign: Address:

TRADE PRACTICES ACT

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CONTRIBUTIONS TO AMATEUR RADIO

Amateur Radio is a forum for WIA members' amateur radio technical experiments, experiences, opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for possible publication. Articles on computer disk are especially welcome. The WIA cannot assume responsibility for loss or damage to any material. "How to Write for Amateur Radio" was published in the August 1992 issue of AR. A photocopy is available on receipt of a stamped, self addressed envelope.

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Fill out the following form and send to:

The Membership Secretary
Wireless Institute of Australia
PO Box 2175
Caulfield Junction, Vic 3161

I wish to obtain further information about the WIA.

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VK2BWI Nightly at 2000 local on 3550 kHz

VK2RCW Continuous on 3699 kHz and 144.950 MHz 5 wpm, 8 wpm, 12 wpm

VK3COD Nightly (weekdays) at 1030 UTC on 28.340 MHz and 147.425 MHz

VK3RCW Continuous on 144.975 MHz 5 wpm, 10 wpm

VK4WIT Monday at 0930 UTC on 3535 kHz

VK4WSS Tuesday at 0930 UTC on 3535 kHz

VK4WCH Wednesday at 1000 UTC on 3535 kHz

VK4AV Thursday at 0930 UTC on 3535 kHz

VK4WIS Sunday at 0930 UTC on 3535 kHz

VK5AWI Nightly at 2030 local on 3550 kHz

VK5RCW Continuous on 144.975 MHz, 5 wpm to 12 wpm

VK6WIA Nightly at 1930 local on 146.700 MHz and nightly (except Saturday) at 1200 UTC on 3.555 MHz.

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The following items are available from your Division's Bookshop
(see the WIA Division Directory on page 3 for the address of your Division)

	Ref	List Price		Ref	List Price
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Ant. Compendium Vol 2 Software 5.25" IBM Disk	BR293	\$22.00	MISCELLANEOUS		
Antenna Compendium Vol 1 — ARRL Book	BR163	\$25.00	Beyond Line of Sight	BR459	\$32.00
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Antenna Pattern Worksheets Pk of 10	BR602	\$3.00	QRP Note Book — DeMaw — ARRL	BR170	\$26.00
Easy Up Antennas	MFJ38	\$39.25	QRP Operating Companion — ARRL — 1992 1st Ed	BR610	\$16.00
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Nth American Callbook 1995	BR338	\$56.50	World Grid Locator Atlas — (Maidenhead Locator) — ARRL	BR197	\$13.00
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World Radio TV Handbook	BR450	\$40.00			
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Electronics Data Book — ARRL	BR201	\$40.00	Weather Satellite Handbook — ARRL — 5th Edition 1994	BR324	\$52.00
Radio Communication Handbook — RSGB 1994 8th Edition	BR266	\$66.00	Weather Satellite Handbook Software 5.25" IBM Disk	BR326	\$22.00
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50 Years of the ARRL — 1981	BR196	\$8.00	Microwave Handbook Vol 1 — RSGB	BR318	\$38.00
Bright Sparks of Wireless — RSGB	BR394	\$44.00	Microwave Handbook Vol 2 — RSGB	BR437	\$57.00
Dawn of Amateur Radio — RSGB	BR395	\$58.00	Microwave Handbook Vol 3 — RSGB	BR447	\$57.00
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			Band Plans Booklet		\$2.80
			WIA Car Bumper Stickers		\$0.50
			WIA Car Window Stickers		\$0.50
			WIA Log Book — Vertical Format		\$5.00
			WIA Tape — Sounds of Amateur Radio		\$7.00

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Divisions may offer discounts to WIA members — check before ordering. Postage and packing, if applicable, is extra.

All orders must be accompanied by a remittance.

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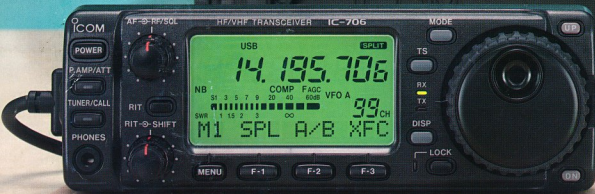
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